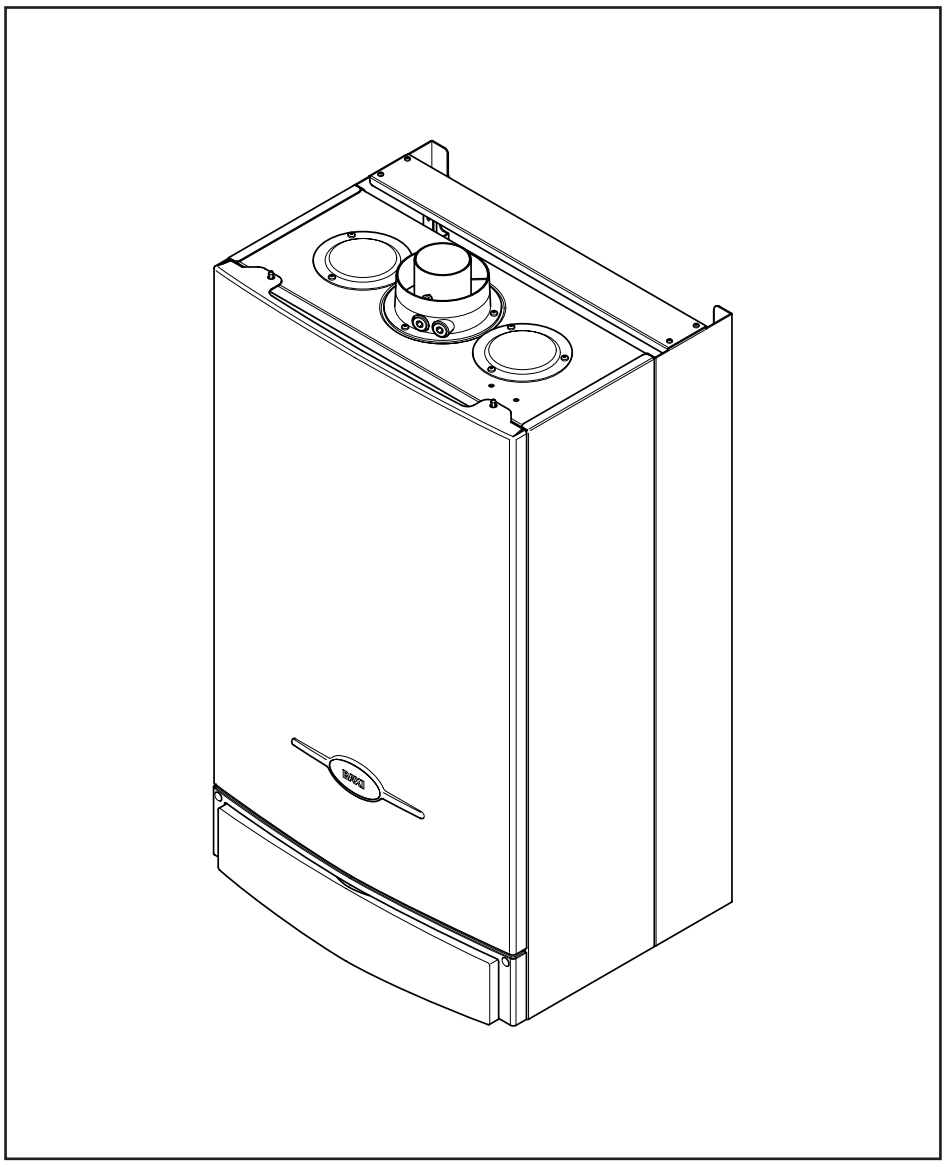
Please leave these instructions with the user

Baxi Combi 80 Maxflue

Gas Fired Wall Mounted Combination Boiler

Installation and Servicing Instructions



BAXI

Natural Gas

Baxi Combi 80 Maxflue
G.C.N° 47 075 07

Baxi UK Limited is one of the leading manufacturers of domestic heating products in the UK.

Our first priority is to give a high quality service to our customers. Quality is designed into every Baxi product - products which fulfil the demands and needs of customers, offering choice, efficiency and reliability.

To keep ahead of changing trends, we have made a commitment to develop new ideas using the latest technology - with the aim of continuing to make the products that customers want to buy.

Everyone who works at Baxi has a commitment to quality because we know that satisfied customers mean continued success.

We hope you get a satisfactory service from Baxi. If not, please let us know.

The boiler meets the requirements of Statutory Instrument " The Boiler (Efficiency) Regulations 1993 N° 3083" and is deemed to meet the requirements of Directive 92/42/EEC on the energy efficiency requirements for new hot water boilers fired with liquid or gaseous fuels:-

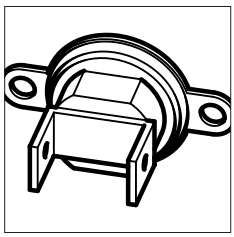
Type test for purpose of Regulation 5 certified by:
Notified Body 0051.

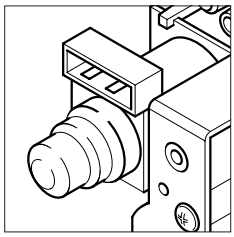
Product/Production certified by:
Notified Body 0051.

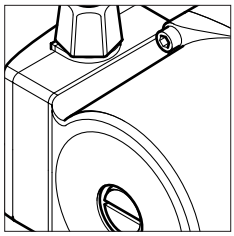
For GB/IE only.

IPX5D

Baxi is a BS-EN ISO 9001
Accredited Company







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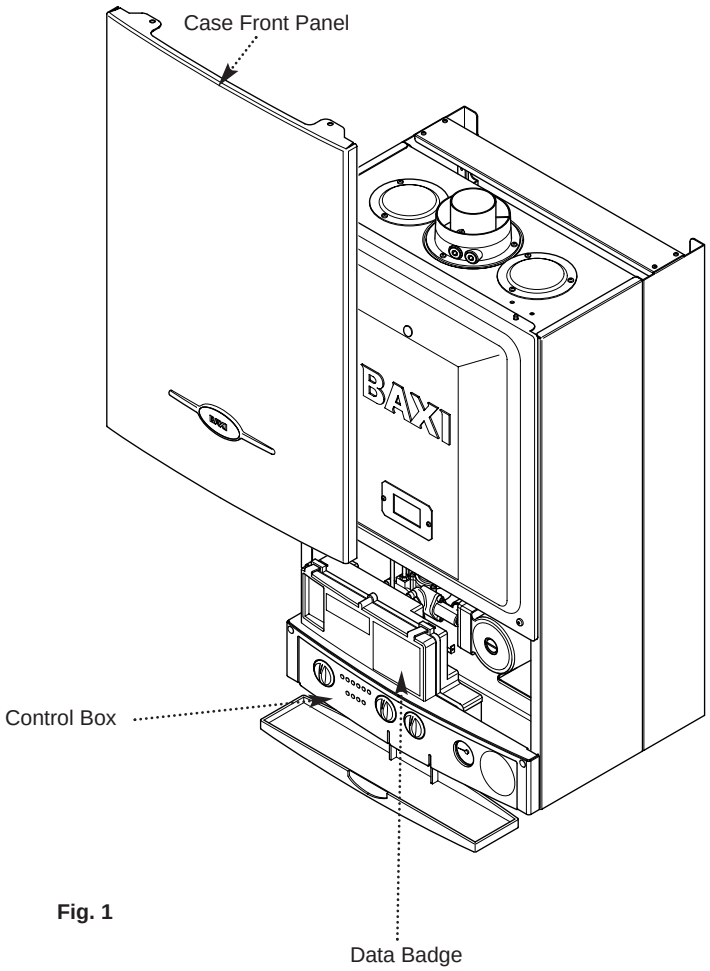


Fig. 1

NOTE: This appliance must be installed in accordance with the manufacturer's instructions and the regulations in force.

Read the instructions fully before installing or using the appliance.

"Benchmark" Log Book

As part of the industry-wide "Benchmark" initiative all Baxi boilers now include an Installation, Commissioning and Service Record Log Book. Please read the Log Book carefully and complete all sections relevant to the appliance and installation. These include sections on the type of controls employed, flushing the system, burner operating pressure etc. The details of the Log Book will be required in the event of any warranty work. Also, there is a section to be completed at each subsequent regular service visit. The Log Book must be left with the user.

1.0 Introduction

Baxi UK Limited declare that no substances harmful to health are contained in the appliance or used during appliance manufacture.

1.1 Description

1. The Baxi Combi 80 Maxflue is a fully automatic gas fired wall mounted combination boiler. It is room sealed and fan assisted, and will serve central heating and mains fed domestic hot water.

2. The boiler is set to give a maximum output of 24.0 kW for hot water and central heating.

3. It is designed for use on Natural Gas (G20) and can be converted to use Propane or Butane.

4. The boiler is suitable for use only on fully pumped sealed heating systems. Priority is given to domestic hot water.

5. The boiler data badge gives details of the model, serial number and Gas Council number and is situated on the control box. It is visible when the case front panel is removed (Fig. 1).

6. The boiler is intended for use with an 80mm diameter twin flue system. The system must be installed in conjunction with a single roof terminal or two separate flue and air terminals.

7. Separate terminals do not have to be on the same wall but must not be on opposite walls of the dwelling.

8. The separate terminals allow greater flexibility when siting the boiler - see Sections 7.8 to 7.13 of Site Requirements for full details of available flue components, maximum lengths etc.

9. The boiler is intended to be installed in residential / commercial / light industrial E.M.C. environments on a governed meter supply only.

10. **All systems must be thoroughly flushed and treated with inhibitor (see section 6.2).**

1.2 Installation

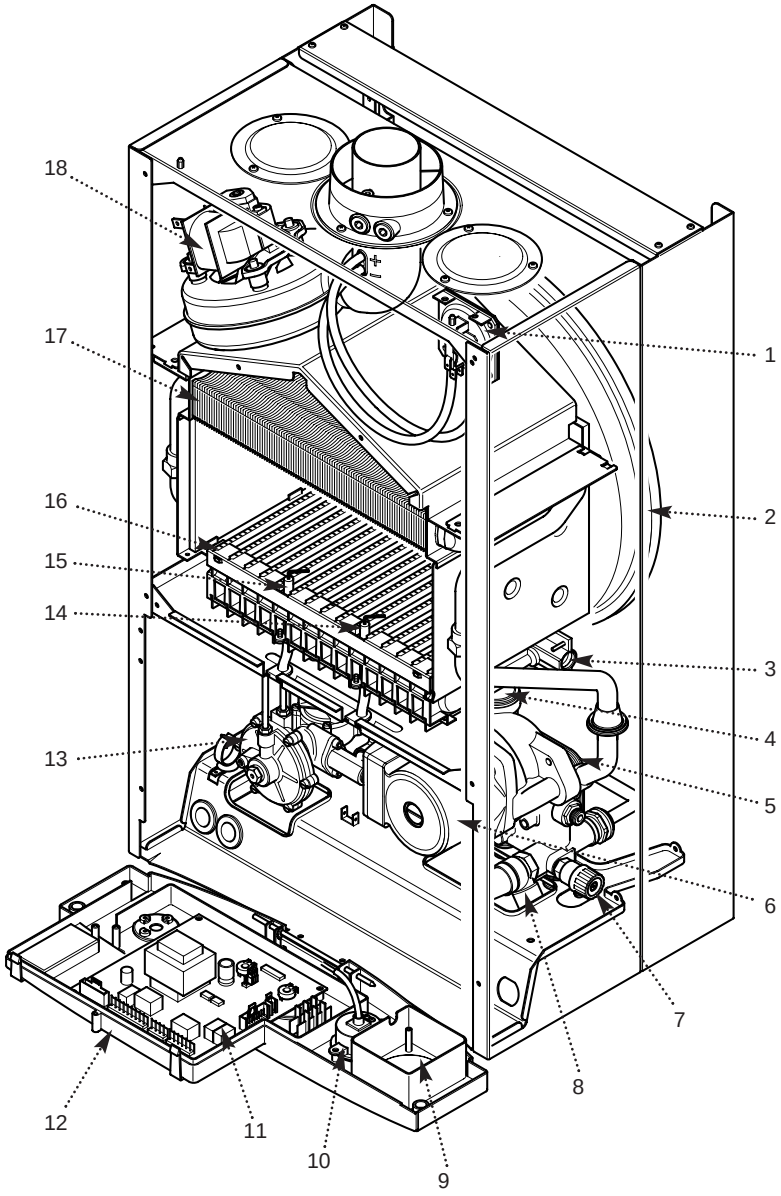
1. The appliance is suitable for installation only in G.B. and I.E. and should be installed in accordance with the rules in force. For Ireland install in accordance with I.S.813 **"Installation of Gas Appliances"**. The installation must be carried out by a CORGI Registered Installer or other competent person and be in accordance with the relevant requirements of **Gas Safety** (Installation and Use) **Regulations**, the **Building Regulations** (Scotland) (Consolidation), the **Local Building Regulations**, the **Current I.E.E. Wiring Regulations** and the bye laws of the Local Water Undertaking. Where no specific instructions are given, reference should be made to the relevant **BRITISH STANDARD CODES OF PRACTICE.**

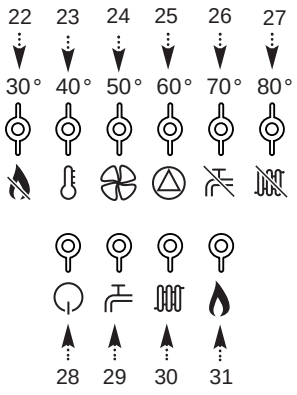
1.3 Optional Extras

Various control accessories, LPG conversion kits etc. are available as optional extras. These are detailed in a separate publication.

2.0 General Layout

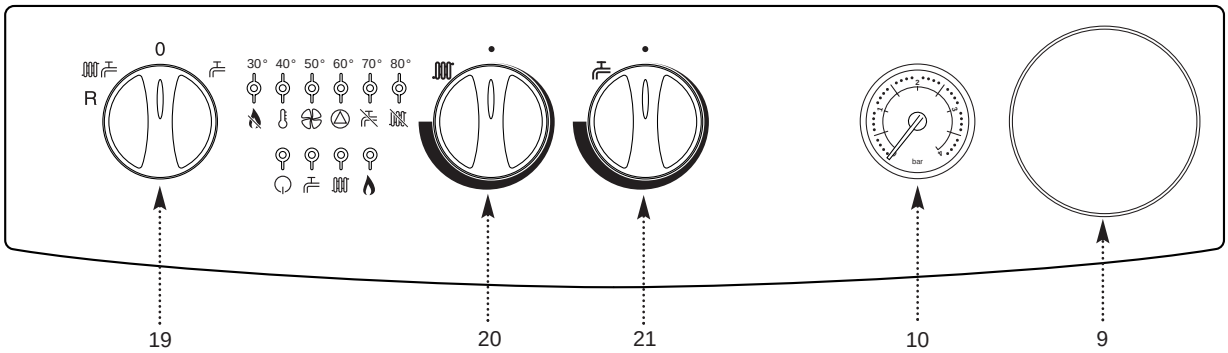
2.1 Layout





1. Air Pressure Switch
2. Expansion Vessel
3. Burner Manifold
4. Automatic Air Vent
5. DHW Plate Heat Exchanger
6. Circulation Pump
7. Drain Off Point
8. Pressure Relief Valve
9. Position For Optional Integral Timer
10. Central Heating System Pressure Gauge
11. PCB
12. Control Box
13. 3-Way Valve Assembly
14. Flame Sensing Electrode
15. Spark Electrode
16. Burner
17. Primary Heat Exchanger
18. Fan Assembly
19. On/Off/Reset Selector Switch
20. Central Heating Temperature Control
21. Hot Water Temperature Control
22. Flame Failure
23. Safety Thermostat
24. Fault on Fan or Flue
25. Fault on Pump or Low System Pressure
26. Fault on Hot Water Sensor
27. Fault on Central Heating Sensor
28. Power On
29. Hot Water Mode
30. Central Heating / Hot Water Mode
31. Burner On

When neons 22 to 27 are constantly illuminated, they indicate the temperature of the central heating water.



Central Heating Circuit

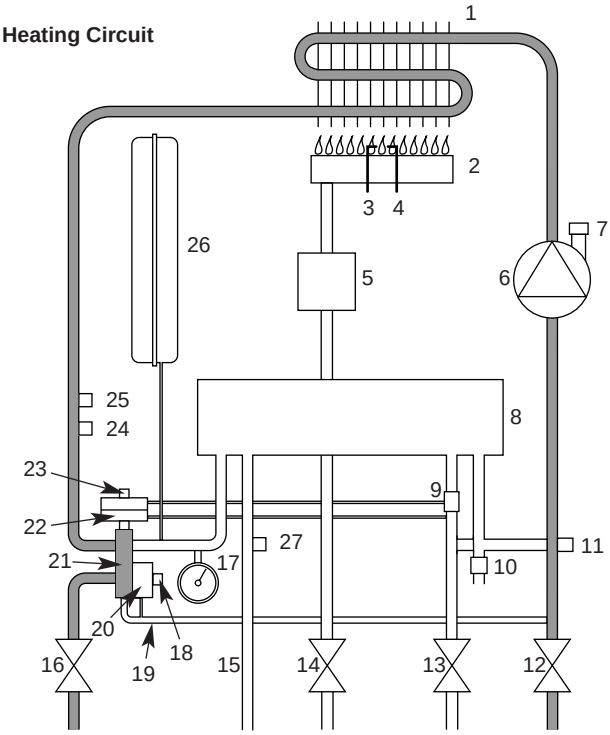


Fig. 2

Key

1 Primary Heat Exchanger
2 Burner
3 Ignition Electrode
4 Flame Sensing Electrode
5 Gas Valve
6 Pump
7 Automatic Air Vent
8 Plate Heat Exchanger
9 Flow Sensor with Filter
10 Pressure Relief Valve
11 Boiler Drain Point
12 Heating Return
13 Cold Water Inlet On/Off Valve and Filter
14 Gas Inlet
15 Domestic Hot Water Outlet
16 Heating Flow
17 Pressure Gauge
18 Hydraulic Differential Pressure Sensor Microswitch
19 Automatic By-Pass
20 Hydraulic Differential Pressure Sensor
21 Diverter Valve Assembly
22 Domestic Hot Water Flow Priority Assembly
23 Domestic Hot Water Flow Priority Microswitch
24 Overheat Thermostat
25 Central Heating NTC Sensor
26 Expansion Vessel
27 Domestic Hot Water NTC Sensor

Domestic Hot Water Circuit

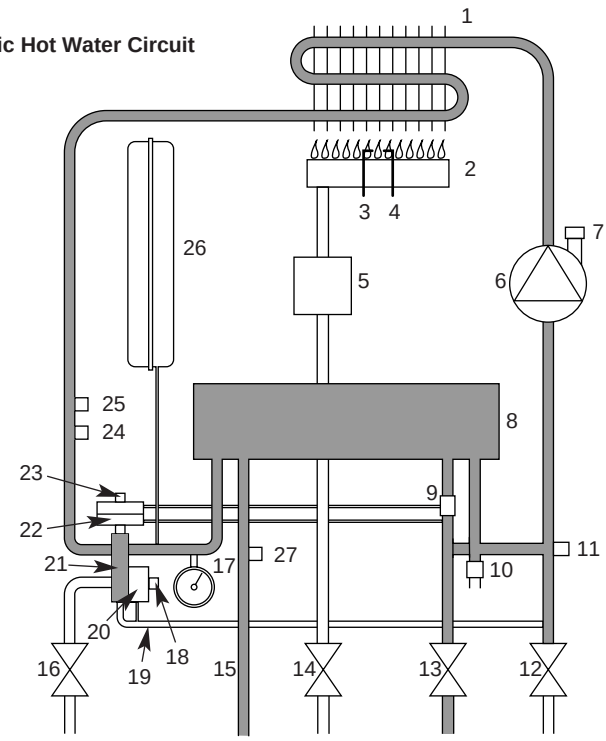


Fig. 3

3.0 Appliance Operation

NOTE: All delay timers mentioned in 3.1 and 3.2 are overridden by domestic hot water demand.

3.1 Central Heating Mode (Fig. 2)

1. With a demand for heating, the pump circulates water through the primary circuit. At a flow rate of approximately 125 l/hr the central heating flow switch operates, initiating the ignition sequence.

2. The main burner ignites at low rate, then the gas valve controls the gas rate to maintain the heating temperature measured by the thermostat sensor.

3. When the flow temperature exceeds the setting temperature, a 3 minute delay occurs before the burner relights automatically (anti-cycling). The pump continues to run during this period.

4. When the demand is satisfied the burner is extinguished and the pump continues to run for a period of 3 minutes (Pump Overrun).

3.2 Domestic Hot Water Mode (Fig. 3)

1. Priority is given to the domestic hot water supply. A demand at a tap or shower will override any central heating requirement.

2. The flow of water will operate the DHW flow switch which causes the 3 way valve to change position. This will allow the pump to circulate the primary water through the DHW plate heat exchanger.

3. The burner will light automatically and the temperature of the domestic hot water is controlled by the thermostat sensor.

4. When the domestic hot water demand ceases the burner will extinguish and the diverter valve will remain in the domestic hot water mode, unless there is a demand for central heating.

IMPORTANT: When the selector switch is in the '0' (Off) position the electrical supply to the boiler is isolated. The boiler will not operate and the integral timer (if fitted) will require resetting once the selector switch is set to either the DHW position or CH position.

3.3 Frost Protection Mode

1. The frost protection mode is integral to the appliance and functions only with the selector switch (see Section 2.1) in the domestic hot water and central heating position. If the system temperature falls below 5° C then the boiler will fire on its minimum setting until a flow temperature of 30° C is reached. Further protection can be incorporated by using a system frost thermostat.

3.4 Pump Protection

1. With the selector switch (see Section 2.1) in either the central heating or central heating and hot water position the pump will automatically operate for 1 minute in every 24 hours to prevent sticking

4.0 Technical Data

4.1 Combi 80 Maxflue

Appliance Type	C_{12}	C_{32}	C_{52}
Appliance Category	CAT II $_{2H\ 3+}$		
Heat Input C/H & DHW	(Gross)		
kW	26.3 Max		
Btu/h	89,739 Max		
Heat Output	Max	Min	
kW	24.0	9.3	
Btu/h	81,891	31,730	
Max Gas Rate	(Natural Gas) (After 10 Mins)		
m^3/h	2.78		
ft^3/h	98.12		
Burner Pressure	(Natural Gas)		
	Max Rate	Min Rate	
mbar	10.6 ± 0.5	1.9 ± 0.2	
in wg	4.24 ± 0.2	0.76 ± 0.2	
Inlet Pressure (Natural Gas)			
mbar	20		
in wg	8		
Burner Injector (Natural Gas)	15 x 1.18mm Diameter		
Electrical Supply	230V~ 50H_Z (Appliance must be connected to an earthed supply)		
Power Consumption	170W		
External Fuse Rating	3A		
Internal Fuse Rating	Fuse 2A Fast Blow to BS 4265		
Electrical Protection	IPX5D		

NO_X Class	3	
Flue Terminal Dimensions	Diameter	80mm
	Projection	80mm

Connections		copper tails
Gas Supply	-	22mm
Central Heating Flow	-	22mm
Central Heating Return	-	22mm
Cold Water Mains Inlet	-	15mm
DHW Flow	-	15mm
Pressure Relief Discharge	-	15mm
Outercase Dimensions		
Casing Height	-	780mm
Overall Height Inc Flue Elbow	-	980mm
Casing Width	-	450mm
Casing Depth	-	345mm

Clearances	
Both Sides	5 mm Min
Above Casing	200 mm Min
Below Casing	200 mm Min
Front	450 mm Min (For Servicing)
Front	5 mm Min (In Operation)

Weights	kg
Packaged Boiler Carton	47.5
Packaged Flue Kit	2.5
Installation Lift Weight	39.5

Central Heating Primary Circuit Pressures	bar
Safety Discharge	3
Max Operating	2.5
Min Operating	0.5
Recommend Operating	1-2

DHW Circuit Pressures	bar
Max Operating	8
Min Operating	0.2
Min Operating Pressure at 9.8 l/min	0.9
Flow Rates	l/min
DHW Flow Rate @ 30°C Rise	13.7
DHW Flow Rate @ 35°C Rise	9.8
Min Working DHW Flow Rate	2.5

Pump
Available Head See graph below

Expansion Vessel - (For Central Heating only. Integral with appliance)

	bar
Min Pre-charge Pressure	0.5
	litre
Max Capacity of CH System	125
Primary Water Content of Boiler (unpressurised)	1.0

Temperatures
C.H. Flow Temp (adjustable)
35°C to 85°C max (± 5°C)

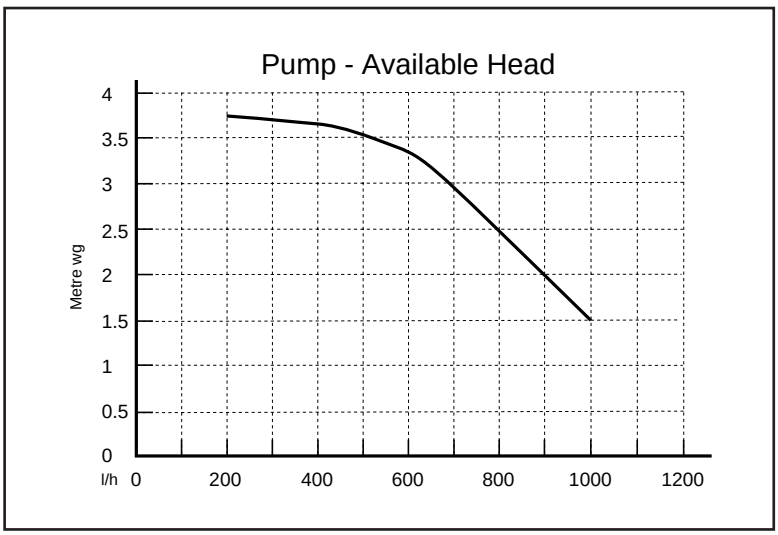
D.H.W. Flow Temp (adjustable)
35°C to 65°C max (± 5°C)
dependent upon flow rate

SEDBUK Declaration For Combi 80 Maxflue

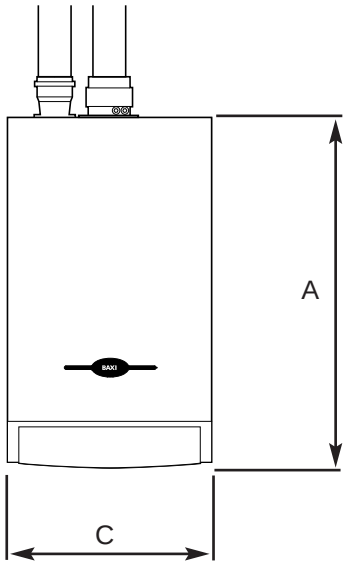
The seasonal efficiency (SEDBUK) is 78.5 %

This value is used in the UK Government's Standard Assessment Procedure (SAP) for energy rating of dwellings. The test data from which it has been calculated have been certified by 0051.

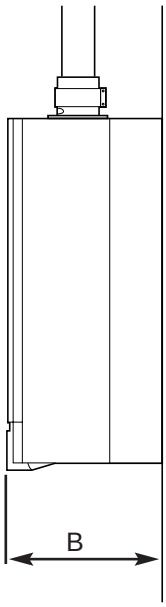
LPG Gases Propane - G31 and Butane - G30			
Burner Injector 15 x 0.69			
Burner Pressure		Max Rate	Min Rate
Propane	mbar	35.8	6.2
	in wg	14.3	2.5
Butane	mbar	28.0	4.7
	in wg	11.2	1.9
Inlet Pressures		Propane	Butane
	mbar	37	30
	in wg	14.8	12

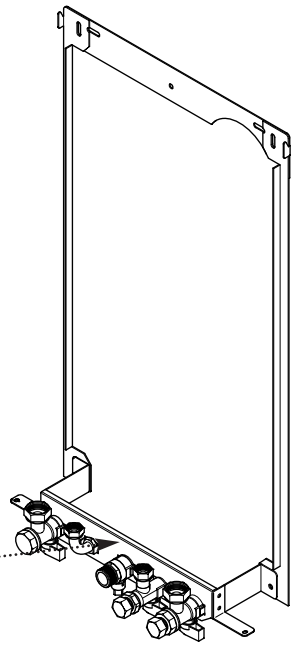


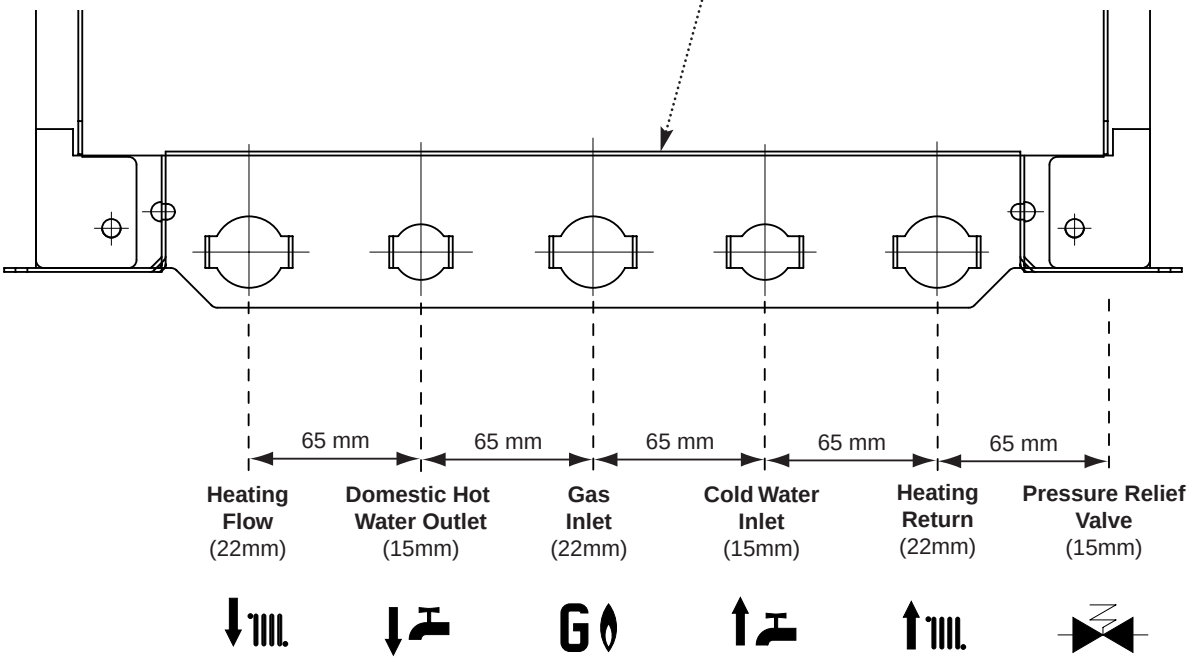
5.0 Dimensions and Fixings



Dimensions
A 780mm
B 345mm
C 450mm







6.0 System Details

6.1 Information

1. The Baxi Combi 80 Maxflue Combination Boiler is a 'Water Bylaws Scheme - Approved Product'. To comply with the Water Bylaws your attention is drawn to the following installation requirements and notes (IRN).

a) IRN 001 - See text of entry for installation requirements and notes.
b) IRN 302 - Bylaw 14.

2. Reference to the WRC publications, 'Water fittings and materials directory' and 'Water supply bylaws guide' give full details of bylaws and the IRNs.

6.2 Central Heating Circuit

1. The appliance is suitable for fully pumped SEALED SYSTEMS ONLY.

Treatment of Water Circulating Systems

- All recirculatory water systems will be subject to corrosion unless an appropriate water treatment is applied. This means that the efficiency of the system will deteriorate as corrosion sludge accumulates within the system, risking damage to pump and valves, boiler noise and circulation problems.
- For optimum performance after installation this boiler and its associated central heating system must be flushed in accordance with the guidelines given in BS 7593 "Treatment of water in domestic hot water central heating systems".
- This must involve the use of a proprietary cleanser, such as BetzDearborn Sentinel X300 or X400, or Fernox Superfloc. Full instructions are supplied with the products, but for immediate information please contact BetzDearborn (0151 420 9563) or Fernox (01799 550 811) directly.
- For long term protection against corrosion and scale, after flushing it is recommended that an inhibitor such as BetzDearborn Sentinel X100, or Fernox MB-1 or Copal is dosed in accordance with the guidelines given in BS 7593.

Failure to flush and add inhibitor to the system may invalidate the appliance warranty.

- It is important to check the inhibitor concentration after installation, system modification and at every service in accordance with the manufacturer's instructions. (Test kits are available from inhibitor stockists.)
- For information or advice regarding any of the above contact Baxi Technical Enquires.

6.3 Bypass

1. The boiler is fitted with an automatic integral bypass.

6.4 System Control

1. The boiler is designed for use in a heating system that incorporates external controls, i.e. a minimum of a timer device.

2. Suitable timer kits are available as optional extras.

3. For optimum operating conditions and maximum economy the fitting of a programmable room thermostat, such as the Baxi Combi Controller, is recommended.

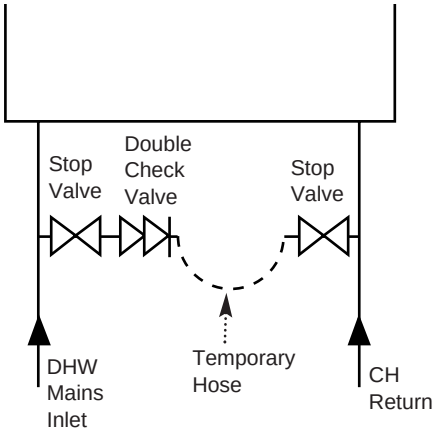


Fig. 4

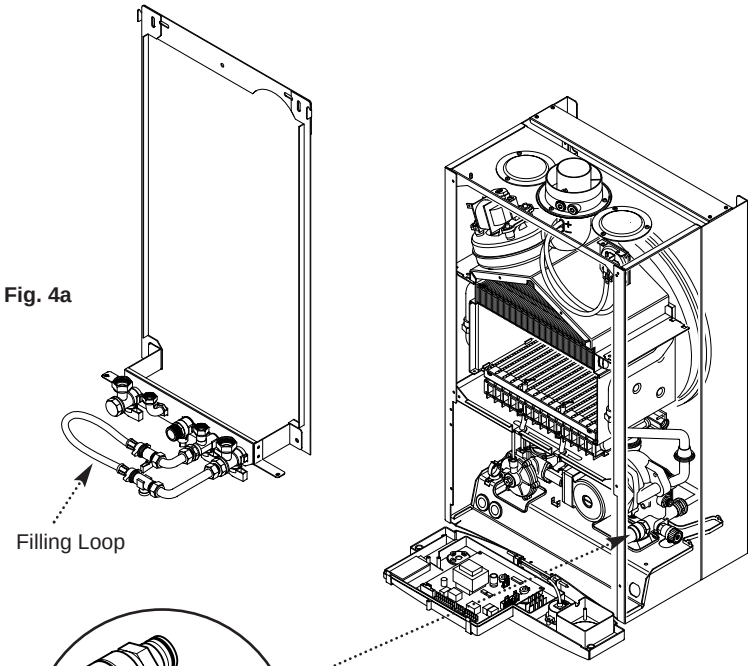


Fig. 4a

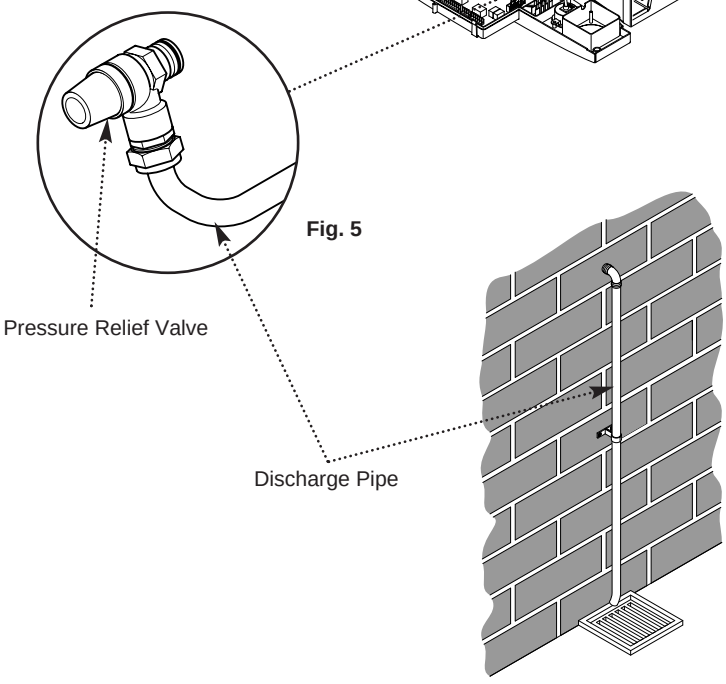


Fig. 5

6.0 System Details

6.5 System Filling and Pressurising

1. A filling point connection on the central heating return pipework must be provided to facilitate initial filling and pressurising and also any subsequent water loss replacement/refilling.

2. There are connection points on the mains cold water inlet and central heating return isolating taps (Fig. 4a) to which the optional filling loop kit (Part No. 248221) can be assembled.

3. The filling method adopted must be in accordance with the Water Supply (Water Fittings) regulations and the Water Bylaws (Scotland).

4. Your attention is drawn to: Paragraph 24 of Schedule 2 Section 8 of the publication Water Regulations Guide which gives recommendations and guidance on approved methods for filling sealed systems.

5. The sealed primary circuits may be filled or replenished by means of a temporary connection between the primary circuit and a supply pipe provided the arrangement in accordance with Diagram R24.2a of the Water Regulations Guide.

6. The temporary hose must be completely removed at both ends after use.

6.6 Expansion Vessel
(Central Heating only)

1. The appliance expansion vessel is pre-charged to 0.5 bar. Therefore, the minimum cold fill pressure is 0.5 bar. The vessel is suitable for correct operation for system capacities up to 125 litres. For greater system capacities an additional expansion vessel must be fitted - refer to BS 7074 Pt 1.

6.7 Pressure Relief Valve (Fig. 5)

1. The pressure relief valve is set at 3 bar, therefore all pipework, fittings, etc. should be suitable for pressures in excess of 3 bar.

2. The pressure relief discharge pipe should be not less than 15mm dia, run continuously downward, and discharge outside the building, preferably over a drain. It should be routed in such a manner that no hazard occurs to occupants or causes damage to wiring or electrical components. The end of the pipe should terminate facing down and towards the wall.

3. The discharge must not be above a window, entrance or other public access. Consideration must be given to the possibility that boiling water/steam could discharge from the pipe.

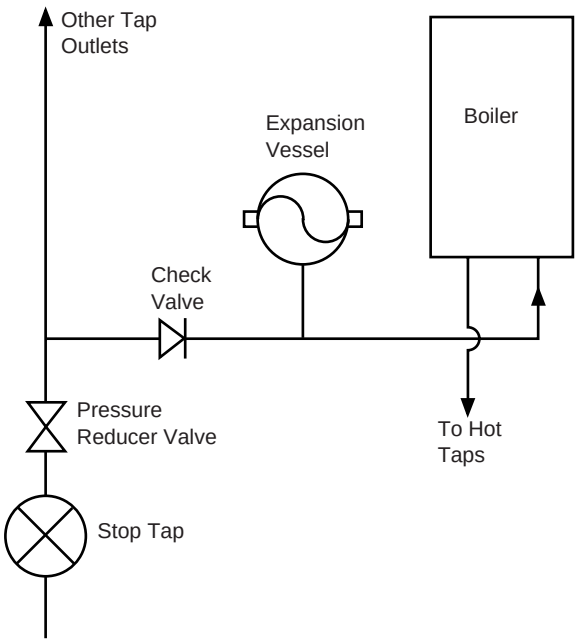


Fig. 6

6.0 System Details

6.8 Domestic Hot Water Circuit (Fig. 6)

1. All DHW circuits, connections, fittings, etc. should be fully in accordance with relevant standards, the Water Supply (water fittings) Regulations and the Water Bylaws (Scotland).

2. Your attention is drawn to:
Schedule 2, Section 6 of the publication Water Regulations Guide which relates to backflow prevention.

3. A single check valve must be fitted as shown in Fig. 6 to prevent backflow to the supply pipe and to ensure the efficient operation of the expansion vessel which is required to accommodate the thermal expansion of the water.

4. When the domestic water system includes any device which prevents water expanding back towards the supply (check valve, loose jumpered stopcock, water meter, water treatment device) then an expansion vessel must be fitted (eg. Zilmet 160ml, R½ 15bar).

5. If the hot water expansion is not provided for, then high pressures can develop which may result in damage to fittings and devices on the system.

6. The boiler's maximum working mains pressure is 8 bar, therefore all pipework, connections, fittings, etc. should be suitable for pressures in excess of 8 bar. A pressure reducing valve must be fitted for pressures in excess of 8 bar. The manufacturer of any outlet fittings, such as a shower valve, may require a lower maximum pressure. The pressure reduction must take account of all fittings connected to the DHW system.

6.9 Showers

1. If a shower control is supplied from the appliance it should be of the thermostatic or pressure balanced type. Thermostatic type shower valves provide the best comfort and guard against water at too high a temperature. Existing controls may not be suitable - refer to the shower valve manufacturer.

6.10 Hard Water Areas

1. If the area of the installation is recognised as a HARD WATER AREA then a suitable device should be fitted to treat the mains water supply to the boiler.

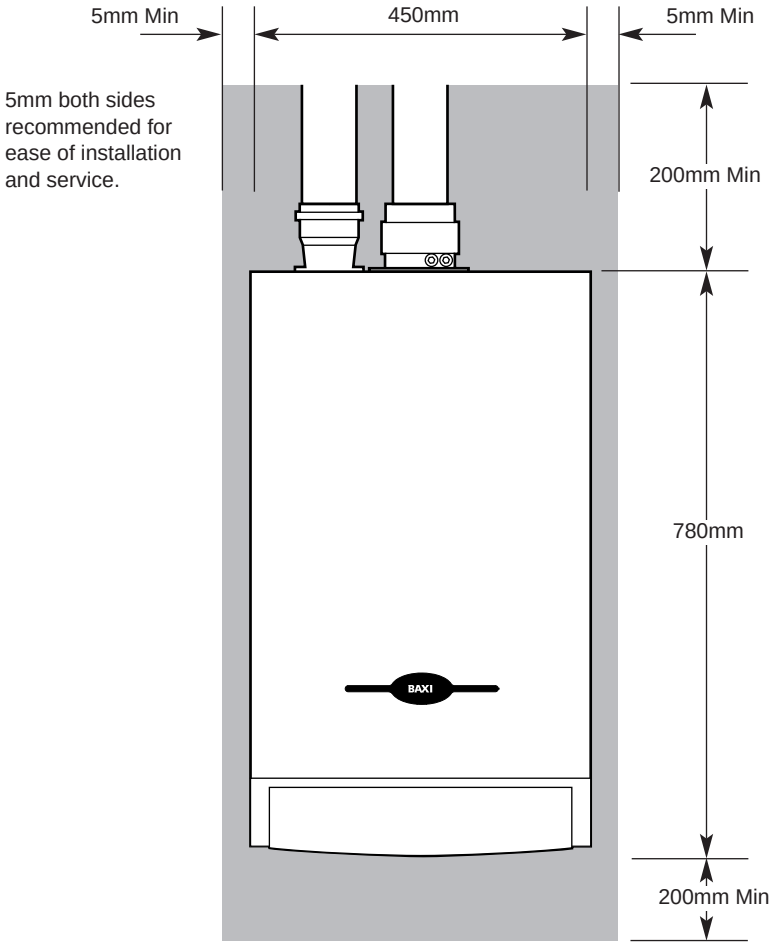


Fig. 7

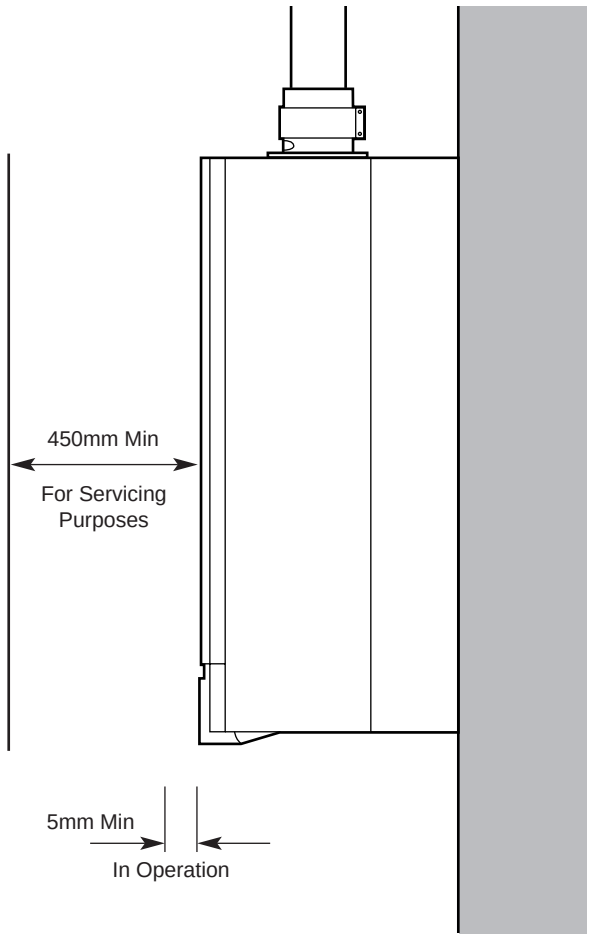


Fig. 8

7.0 Site Requirements

7.1 Information

1. The installation must be carried out by a CORGI Registered Installer or other registered competent person and be in accordance with the relevant requirements of the current **Gas Safety** (Installation and Use) **Regulations**, the **Building Regulations** (Scotland)(Consolidation), the **Local Building Regulations**, the current **I.E.E. Wiring Regulations** and the bye laws of the **Local Water Undertaking**. Where no specific instruction is given reference should be made to the relevant **BRITISH STANDARD CODES OF PRACTICE**. For Ireland install in accordance with IS 813 "**Installation of Gas Appliances**".

7.2 B.S. Codes of Practice

Standard	Scope
BS 6891	Gas Installation.
BS 5546	Installation of hot water supplies for domestic purposes.
BS 5449 Part 1	Forced circulation hot water systems.
BS 6798	Installation of gas fired hot water boilers.
BS 5440 Part 1	Flues.
BS 5440 Part 2	Ventilation.
BS 7074	Expansion vessels and ancillary equipment for sealed water systems.
BS 7593	Treatment of water in domestic hot water central heating systems.

WARNING - The addition of anything that may interfere with the normal operation of the appliance without the express written permission of Baxi UK Limited could invalidate the appliance warranty and infringe the **Gas Safety** (Installation and Use) **Regulations**.

7.3 Clearances (Figs. 7 & 8)

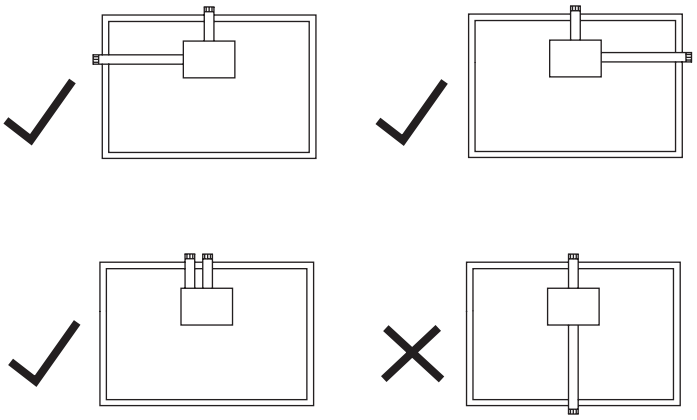
1. A flat vertical area is required for the installation of the boiler.

2. These dimensions include the necessary clearances around the boiler for case removal, spanner access and air movement. Additional clearances may be required for the passage of pipes around local obstructions such as joists running parallel to the front face of the boiler.

7.4 Ventilation of Compartments

1. Where the appliance is installed in a cupboard or compartment, no air vents are required as the appliance runs sufficiently cool.

2. The minimum clearances must be adhered to and the cupboard or compartment big enough to house only the boiler and any ancillary equipment.



Plan view of boiler showing acceptable terminal locations

Fig. 9

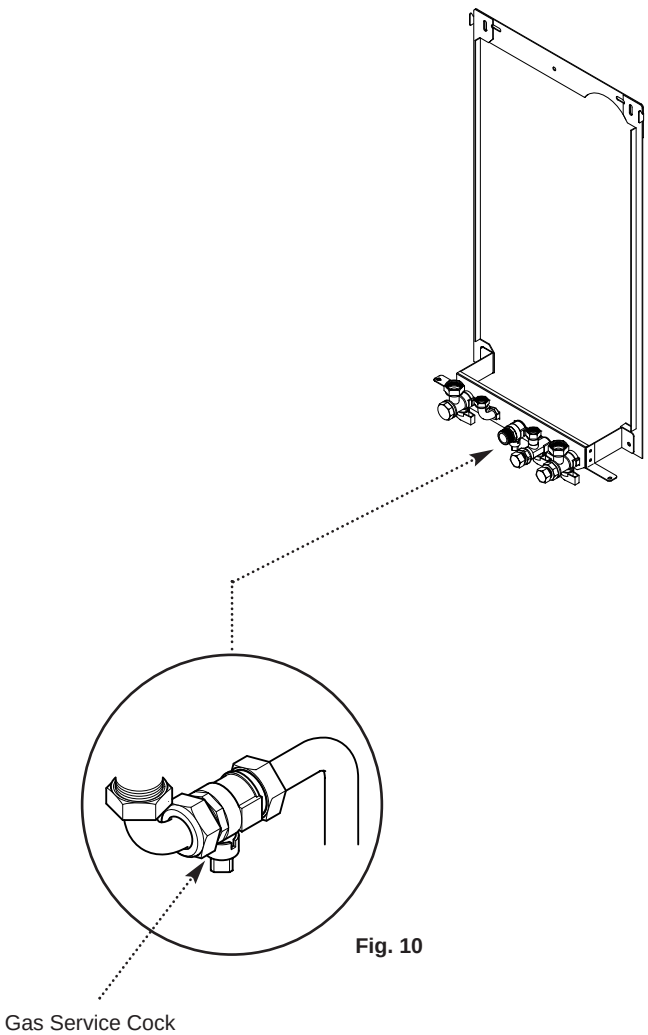


Fig. 10

7.0 Site Requirements

7.5 Location

1. The boiler may be fitted to any suitable internal or external wall. It is primarily intended for use with a twin flue system using separate horizontal terminals. It may also be fitted with a vertical twin flue system connected to a single vertical terminal. The terminal(s) must pass through an outside roof (vertical) or wall (separate horizontal), discharging to atmosphere in a position permitting satisfactory removal of combustion products and providing an adequate air supply. The boiler should be fitted within the building unless otherwise protected by a suitable enclosure i.e. garage or outhouse. (The boiler may be fitted inside a cupboard-see Section 7.4).

2. If the boiler is sited in an unheated enclosure then it is recommended to leave the ON/OFF Selector Switch in the domestic hot water and central heating position to give frost protection.

3. If the boiler is fitted in a room containing a bath or shower reference must be made to the current **I.E.E. Wiring Regulations** and **Building Regulations**. If the boiler is to be fitted into a building of timber frame construction then reference must be made to the current edition of Institute of Gas Engineers Publication IGE/UP/7 (Gas Installations in Timber Framed Housing).

4. Separate terminals may be located on the same or different walls as required, but they **must not be on opposing walls**. For example if one terminal is on a north facing wall the other terminal may be on the west, east or north wall but **not** the south (Fig. 9).

7.6 Gas Supply

1. The gas installation should be in accordance with BS6891.

2. The connection to the appliance is a 22mm copper tail located at the rear of the gas service cock (Fig. 10).

3. Ensure that the pipework from the meter to the appliance is of adequate size. Do not use pipes of a smaller diameter than the boiler gas connection (22mm).

7.7 Electrical Supply

1. External wiring must be correctly earthed, polarised and in accordance with current **I.E.E. Wiring Regulations**.

2. The mains supply is 230V ~ 50H_Z fused at 3A.

NOTE: The method of connection to the electricity supply must facilitate complete electrical isolation of the appliance. Connection may be via a fused double-pole isolator with a contact separation of at least 3mm in all poles and servicing the boiler and system controls only.

7.0 Site Requirements

7.8 Flue & Air Terminals

1. **The flue terminal position must always be in accordance with the current edition of B.S. 5440 Part 1, and either Part J of the Building Regulations England and Wales or Part F of the Building Standards (Scotland) Regulations as appropriate.**

2. The positioning of the air terminal (separate terminal systems only) is not as critical as that of the flue terminal except with respect to other flue terminals, including that of the appliance the air terminal is serving.

3. When positioning the air terminal general reference should be made to BS 5440 Pt. 2. Specifically the air terminal must be separated from any other flue terminal by at least the dimensions given in Table 1.

4. The air terminal must draw directly from outside. It is not permissible to locate it in a loft space, compartment or similar even when there is adequate ventilation.

5. See Section 7.5 “Location” for details of which walls the terminals may be located on. Minimum clearances from the flue terminal are given in Fig. 11 and the accompanying table.

6. If the flue terminal discharges onto a pathway or passageway, check that combustion products will not cause a nuisance. Ensure that any terminal will not obstruct any pathway or passageway.

7. If a terminal is less than 2 metres above a balcony, above ground or above a flat roof to which people have access, then a suitable terminal guard must be provided. This also applies to the air terminal where provision of the guard will prevent damage or blockage, rather than the protection of persons from hot flue gases.

8. The terminals must be positioned such that they will not become obstructed by leaves, snow or similar and not be subject to rain entry.

Air Terminal Position	Appliance Input (kW)	Separation in mm from another terminal	
		Natural Draught	Fanned Draught
Above a Terminal	0-7 7-14 14-32 over 32	300 600 1500 2000	300 300 300 300
Below a Terminal	0-7 7-14 14-32 over 32	300 300 300 600	300 300 300 300
Horizontally to a Terminal	0-7 7-14 14-32 over 32	300 400 600 600	300 300 300 300

Table 1 **Note:** “Appliance Input” refers to any other appliance as well as the one served by the air terminal

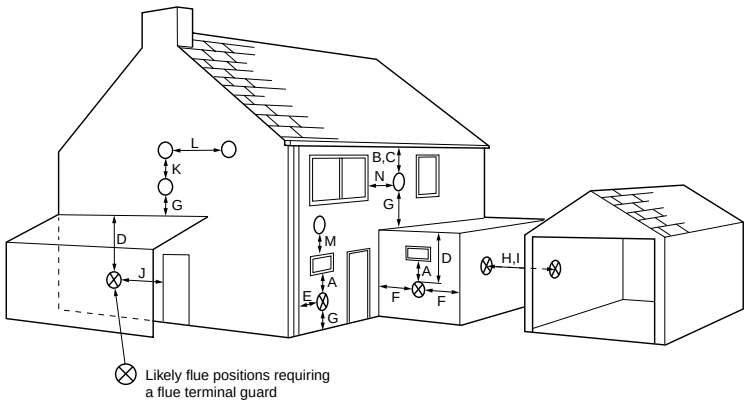
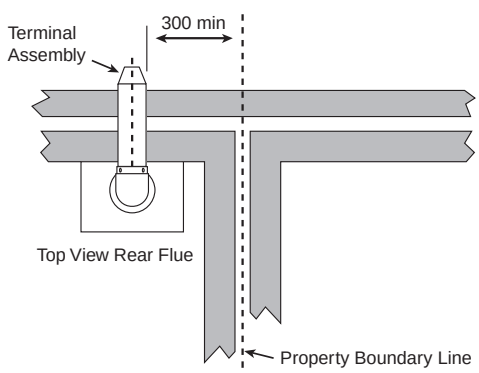


Fig. 11

Terminal Position with Minimum Distance (Fig. 11)		(mm)
A	Directly below an openable window, air vent or any other ventilation opening.	300
B	Below gutter, drain/soil pipe.	25
C	Below eaves.	25
D	Below a balcony/car port roof.	25
E	From vertical drain pipes and soil pipes.	25
F	From internal or external corners.	25
G	Above adjacent ground or balcony level.	300
H	From a surface facing a terminal.	600
I	Facing a terminals.	1200
J	From opening (door/window) in carport into dwelling.	1200
K	Vertically from a terminal on the same wall.	1500
L	Horizontally from a terminal on the same wall.	300
M	Above an opening, air brick, opening window etc.	300
N	Horizontally to an opening, air brick, opening window etc.	300



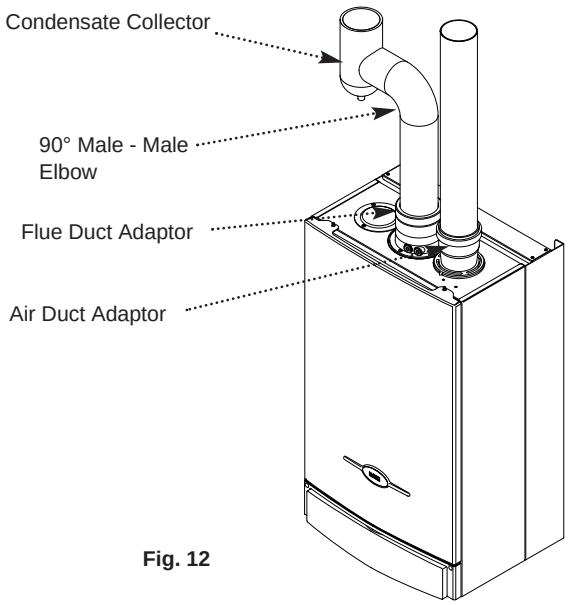


Fig. 12

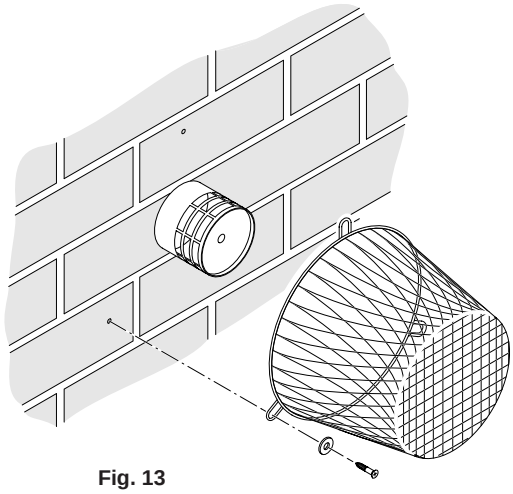


Fig. 13

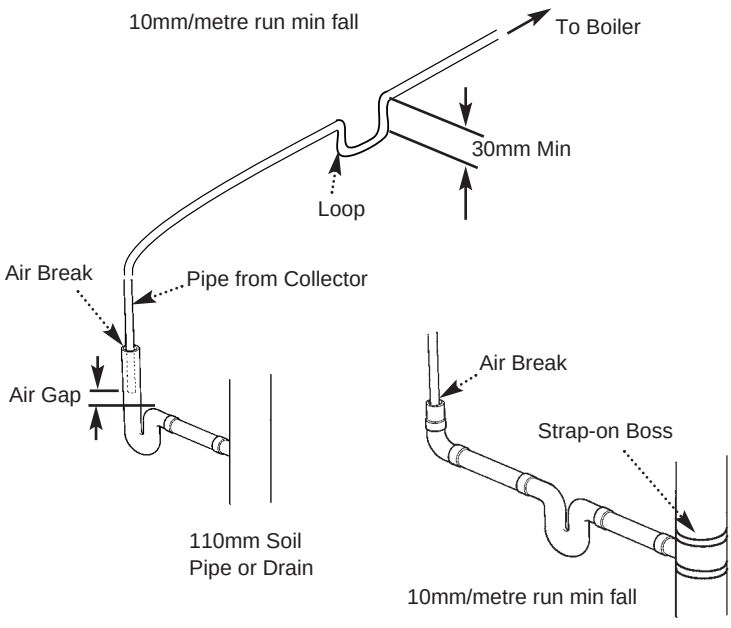


Fig. 14

7.0 Site Requirements

7.9 Flue Connections

1. The flue duct adaptor, air duct adaptor, 90° male - male elbow and condensate collector are supplied in a separate pack (Fig. 12). Also in the pack are two terminals and fixing screws for use with separate termination installations (see Section 7.13, Fig. 15).

2. The remainder of the flue system must be purchased separately according to the requirements of the installation and type of termination (see Section 7.12)

7.10 Terminal Guard (Fig. 13)

1. When codes of practice dictate the use of terminal guards, they can be obtained from most Plumbers' and Builders' Merchants.

2. There must be a clearance of at least 50mm between any part of the terminal and the guard.

3. When ordering a terminal guard, quote the appliance model number.

4. The flue terminal guard should be positioned centrally over the terminal and fixed as illustrated.

7.11 Condensate Drain (Fig. 14)

1. It is necessary to incorporate the condensate trap elbow in the flue duct of all installations.

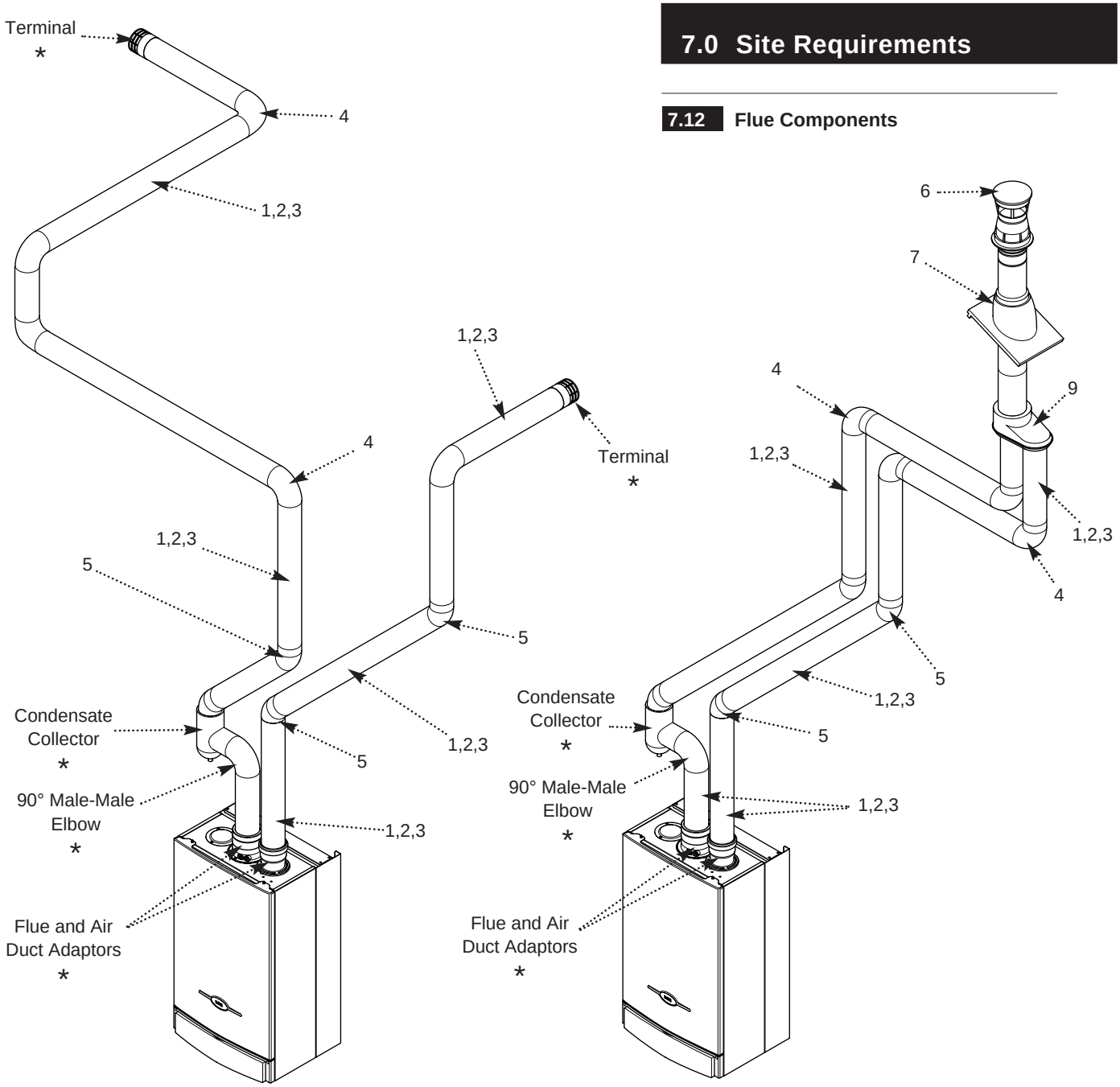
2. The outlet on the condensate collector is intended to accept a 12mm ID PVC pipe. Where possible this should discharge into the household drainage system, preferably terminating internally. If this is not practical, discharge into an outside gulley or soak away is acceptable. To prevent blockage of the condensate pipe due to freezing it should be routed internally as far as possible.

3. The pipe should have a fall over its' entire length of at least 10mm/metre run to ensure effective disposal of condensate. It must also include a trap in its' length to prevent leakage of combustion products.

4. If the condensate drain is connected to the drainage system within the dwelling a further trap must be included downstream of the air break.

5. Further information on condensate discharge is given in the British Gas document "Guidance Notes For The Installation Of Domestic Gas Condensing Boilers".

7.12 Flue Components



Items marked * are supplied with each boiler in a separate pack marked Twin Flue Adaptor Kit (Maxflue) Part No 248338

No.	Description	Part No.
1.	Straight Extension 0.25m	246135
2.	Straight Extension 0.5m	246136
3.	Straight Extension 1.0m	246137
4.	90° Elbow	246139
5.	45° Elbow (pair)	246138
6.	Roof Terminal 4G	246140
7.	Flat Roof Flashing (not shown)	246144
7.	Universal Lead Tile 35/55 Roof Pitch	246142
7.	Universal Lead Tile 25/45 Roof Pitch	246141
7.	Roof Cover Plate Kit (not shown)	246143
8.	Pipe Support 80mm	238684
9.	Roof Terminal Adaptor - Twin	247922

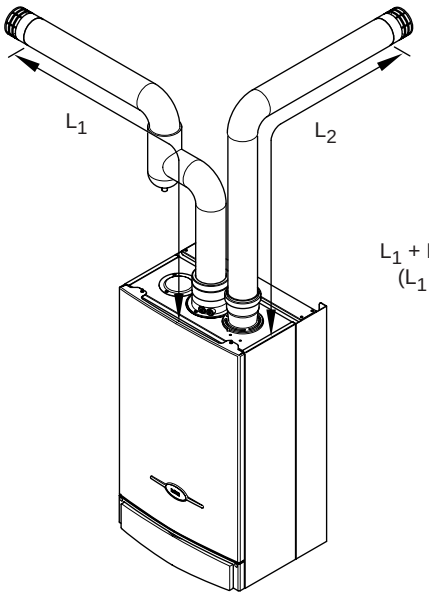


Fig. 15

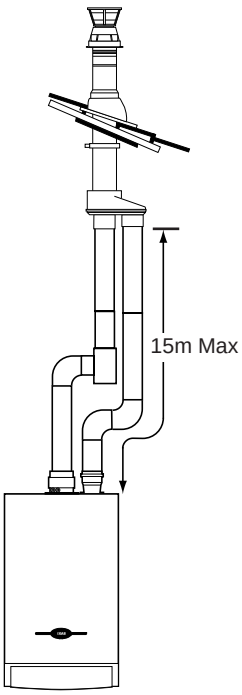


Fig. 16

7.0 Site Requirements

7.13 Flue Options

1. The Baxi Combi 80 Maxflue can be fitted with flue systems as illustrated (Figs. 15 & 16).

2. Maximum permissible equivalent flue lengths are:-

Vertical Roof Terminal	15m
Separate Terminals	70m

IMPORTANT: When installing a flue system with separate terminals the air duct must not exceed 15m.

3. The term Equivalent Flue Length means the actual physical length of flue and air pipe from boiler to terminal(s), plus the addition of a length factor for any bends in the flue system. This factor represents the resistance of the bend expressed as an equivalent straight length.

4. When using 80Ø twin flue pipe each 45° bend is equivalent to 0.25m of straight pipe. A 90° bend is equivalent to 0.5m.

5. If an appliance is installed with separate flue terminals the maximum equivalent length is 70m. The flue and air duct lengths are calculated separately, with the proviso that the air duct cannot exceed 15m. If the air duct was only 3m the flue duct could be up to 67m.

6. When calculating the equivalent length of a twin pipe system connected to a single vertical terminal the physical length is NOT that of both pipes, but that from boiler to terminal. However, all bends in each leg of pipe must be considered in the calculation.

Worked Example:-

Separate Terminal Installation
Air Duct Length = 6.0m
Flue Duct Length = 15.5m
3 off - 45° Bends at 0.25m each
2 off - 90° Bends at 0.5m each

The sum is therefore:-
6.0 + 15.5 + (3 x 0.25) + (2 x 0.5) =
6.0 + 15.5 + 0.75 + 1

Total Equivalent Length = 23.25m

Fixing Template

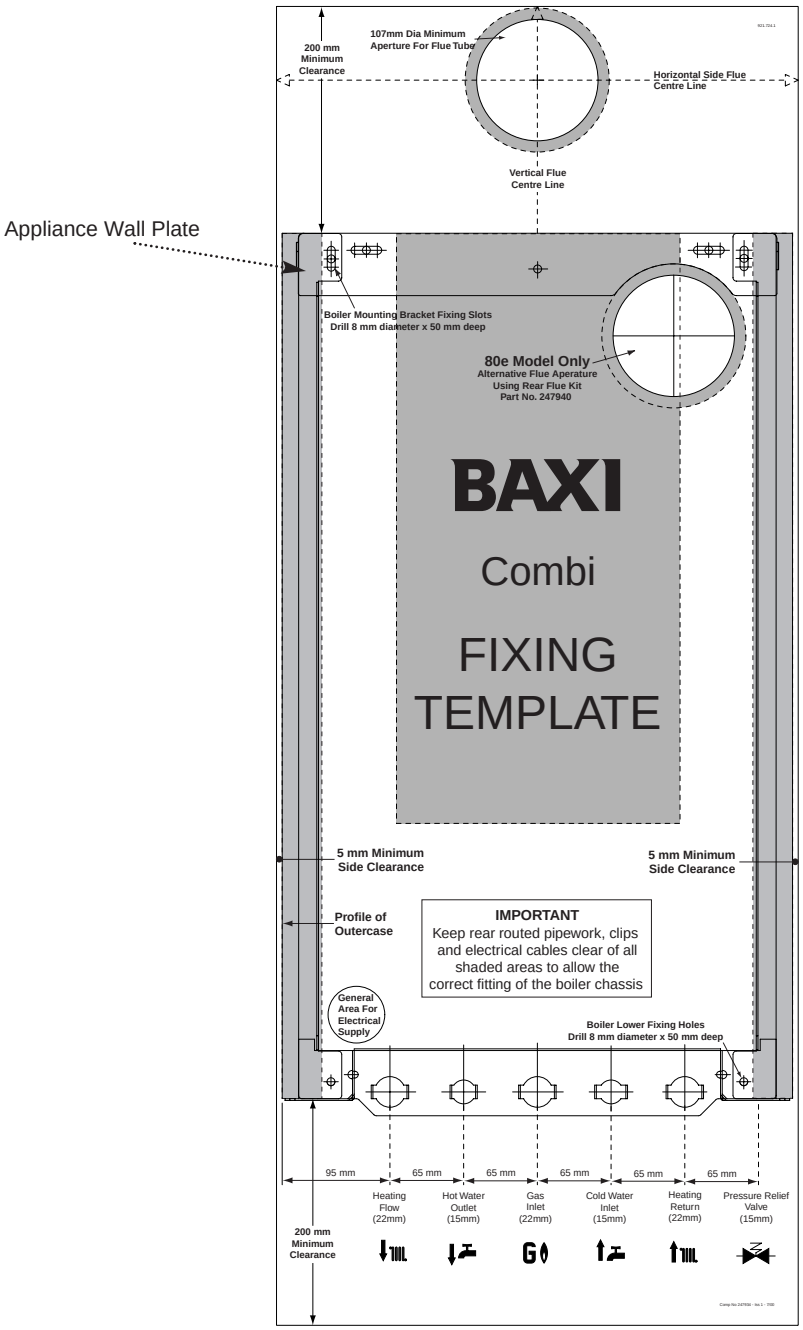

Appliance Wall Plate
200 mm Minimum Clearance
107mm Dia Minimum Aperture For Flue Tube
Horizontal Side Flue Centre Line
Vertical Flue Centre Line
Boiler Mounting Bracket Fixing Slots Drill 8 mm diameter x 50 mm deep
80e Model Only
Alternative Flue Aperature Using Rear Flue Kit Part No. 247940
BAXI
Combi
FIXING TEMPLATE
5 mm Minimum Side Clearance
5 mm Minimum Side Clearance
Profile of Outercase
IMPORTANT
Keep rear routed pipework, clips and electrical cables clear of all shaded areas to allow the correct fitting of the boiler chassis
General Area For Electrical Supply
Boiler Lower Fixing Holes Drill 8 mm diameter x 50 mm deep
95 mm
65 mm
65 mm
65 mm
65 mm
65 mm
Heating Flow (22mm)
Hot Water Outlet (15mm)
Gas Inlet (22mm)
Cold Water Inlet (15mm)
Heating Return (22mm)
Pressure Relief Valve (15mm)
200 mm Minimum Clearance

Fig. 17

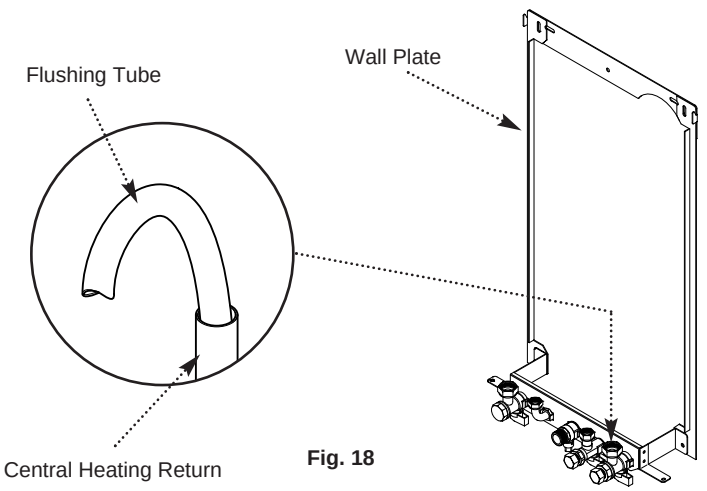


Fig. 18

8.0 Installation

8.1 Initial Preparation

The gas supply, gas type and pressure must be checked for suitability before connection (see Section 7.6).

1. After considering the site requirements (see Section 7.0) position the fixing template (Fig. 17) on the wall ensuring it is level both horizontally and vertically.

2. Mark the position of the two most suitable fixing slots for the wall plate and boiler lower fixing holes. It is preferable to use the horizontal fixing slots.

3. Note the shaded area on the template. Pipework may be routed upwards behind the boiler, providing it does not conflict with the shaded area.

4. If required, mark the position of the gas and water pipes. Remove the template.

5. Drill the wall as previously marked to accept the wall plugs supplied. Secure the wall plate using the fixing screws.

6. Using a spirit level ensure that the plate is level before finally tightening the screws.

7. Connect the gas and water pipes to the valves on the wall plate using the copper tails supplied. Ensure that the sealing washers are fitted between the connections.

8.2 Flushing

1. Connect a tube to the central heating flow or return pipe (Fig. 18).

2. Flush thoroughly (see System Details, Section 6.2).

8.3 Preparing The Boiler

1. Remove all packaging.

2. Stand the boiler on its base by using the rear lower edge as a pivot.

NOTE: A small amount of water may drain from the boiler in the upright position.

Baxi UK Limited declare that no substances harmful to health are contained in the appliance or used during construction of the appliance.

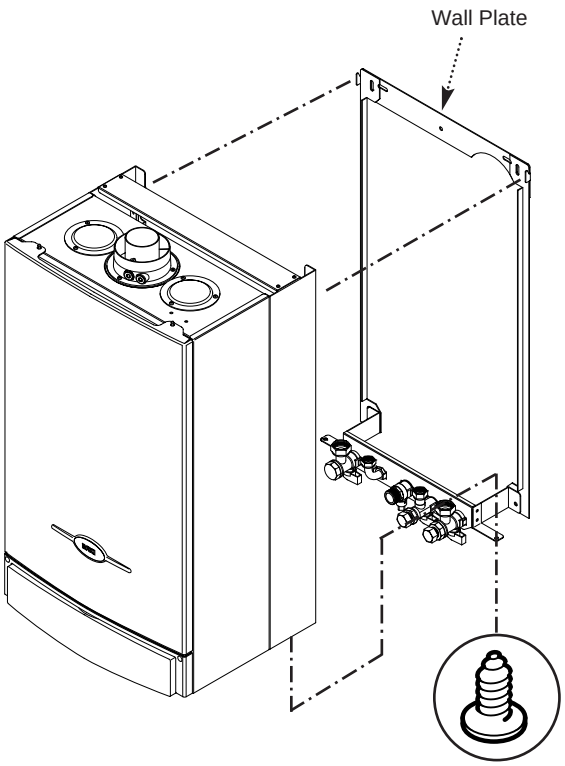


Fig. 19

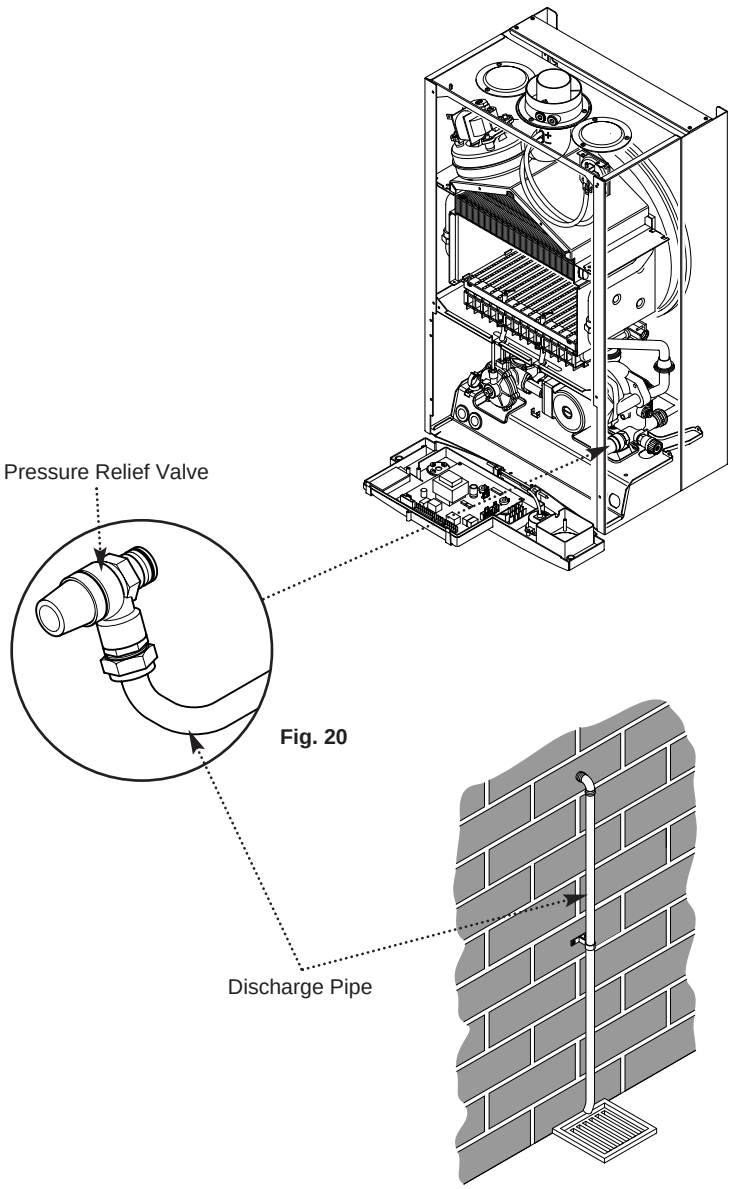


Fig. 20

8.0 Installation

8.4 Fitting The Boiler

1. Remove the sealing caps from the boiler connections.

2. Lift the boiler using the lower edges. Engage the slots at the top rear of the boiler on the wall plate (Fig. 19).

3. Insert the sealing washers between the valves and pipes on the wall plate and the boiler connections. **The rubber washers must be used on the gas connections.**

4. Tighten all the connections.

5. Secure the boiler side panels to the boiler wall plate flanges using the screws provided (Fig. 19).

8.5 Fitting the Pressure Relief Discharge Pipe (Fig. 20)

1. Remove the discharge pipe from the kit.

2. Determine the routing of the discharge pipe in the vicinity of the boiler. Make up as much of the pipework as is practical, including the discharge pipe supplied.

3. The pipework must be at least 15mm diameter and run continuously downwards to a discharge point outside the building. See section 6.7 for further details.

4. Utilising one of the sealing washers, connect the discharge pipe to the adaptor and tighten the nut.

5. Complete the discharge pipework and route it to the outside discharge point.

IMPORTANT: Make all soldered joints before connecting to the pressure relief valve.

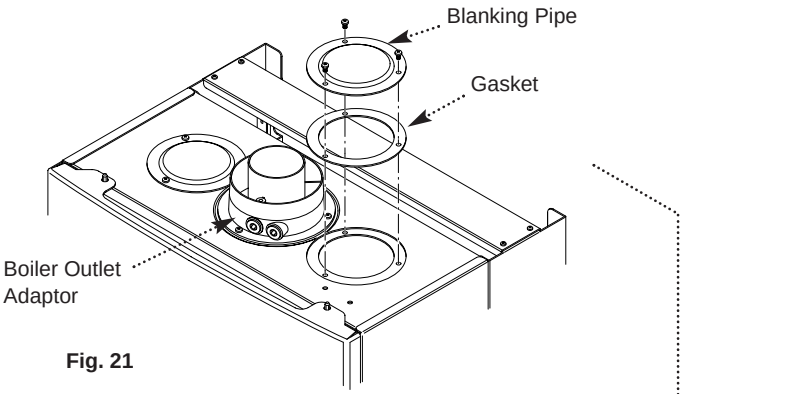


Fig. 21

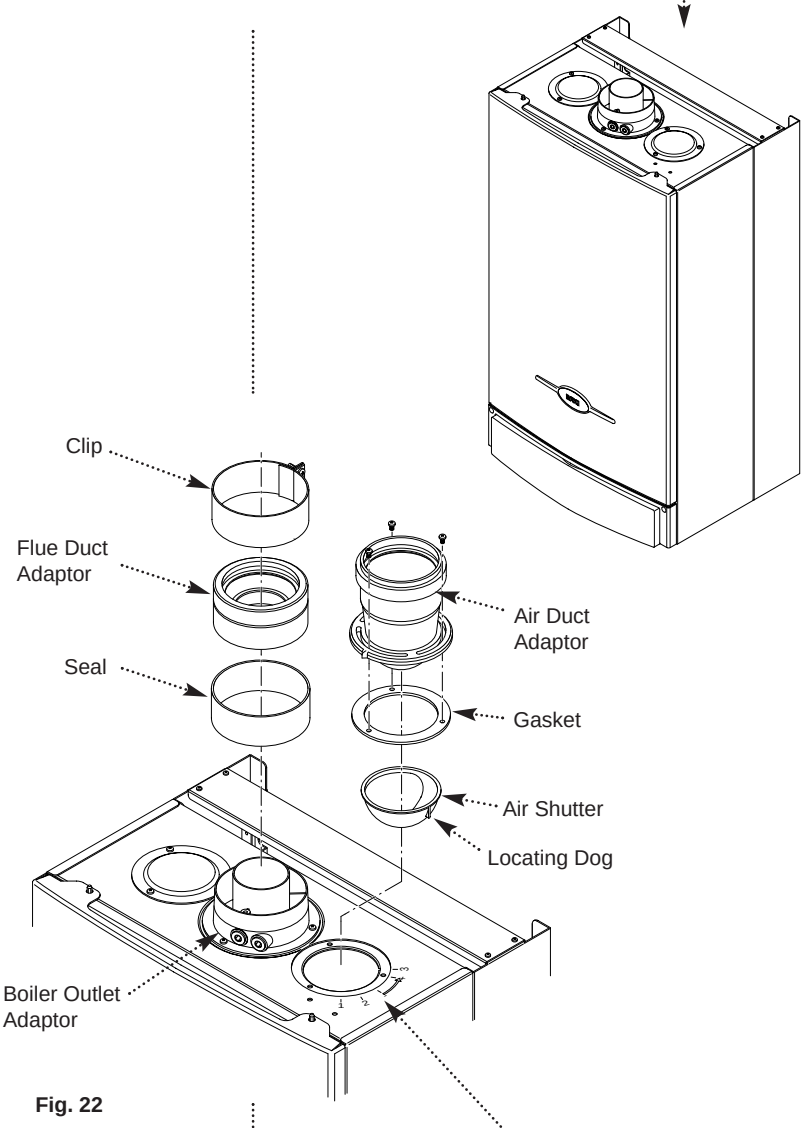


Fig. 22

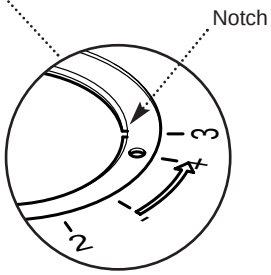


Fig. 22a

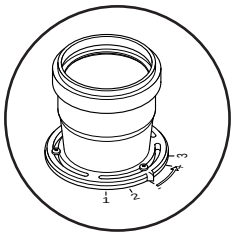


Fig. 23

Air Duct Adaptor

8.0 Installation

8.6 Fitting The Flue

1. Sections 7.12 and 7.13 give details of available flue components, equivalent flue lengths etc.

2. The flue and air duct adaptors must be fitted to the boiler outlet adaptor and boiler top panel (Fig. 21).

3. Pass the seal over the flue duct adaptor. Engage the 60mm diameter end of the flue duct adaptor on the boiler outlet adaptor and slide the seal down so that it equally covers the joint (Fig. 22).

4. Fit the clip over the adaptors and seal, and tighten the securing screws. Where possible position the clip so that the screws are not visible.

5. After determining the routing of the air duct remove the appropriate blanking plate from the boiler top panel, being careful not to damage the gasket. Retain the gasket and screws (Fig. 21).

6. Insert the plastic air shutter into the hole in the top panel. Ensure that the locating dog on the shutter locates in the notch in the top panel (Figs. 22 & 22a).

7. Replace the gasket previously removed and fit the air duct adaptor, ensuring that the pointer on the adaptor aligns with the markings on the top panel (Fig. 22).

8. Engage the air duct adaptor securing screws but do not tighten them. The pointer on the adaptor must align with one of the three numbered marks on the top panel depending on flue length. This will give the correct air inlet restriction.

Total Equivalent Flue Length	Top Panel Mark
0 to 15m	1
15 to 30m	2
30 to 70m	3

9. Rotate the adaptor so that the pointer aligns with the appropriate numbered mark and fully tighten the securing screws (Fig. 23).

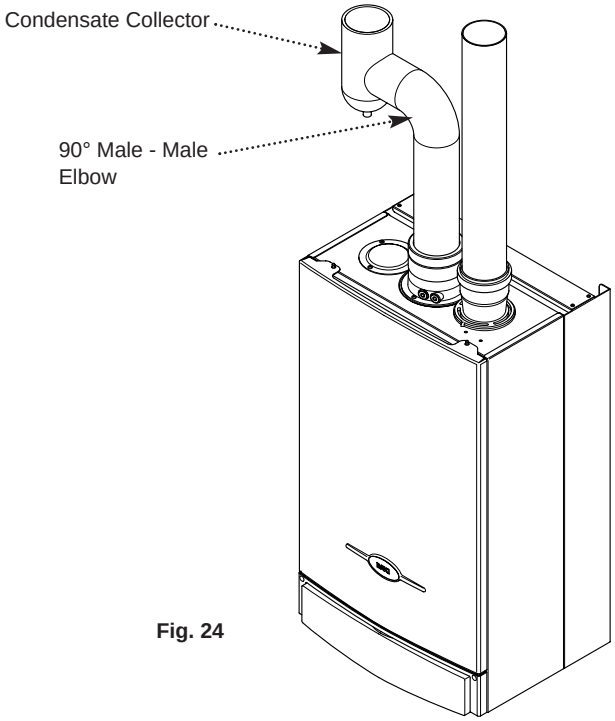


Fig. 24

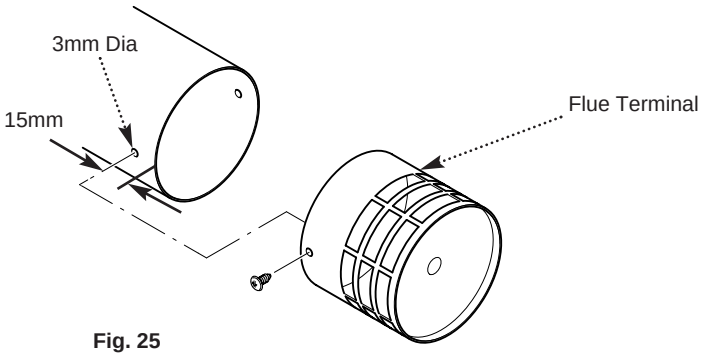


Fig. 25

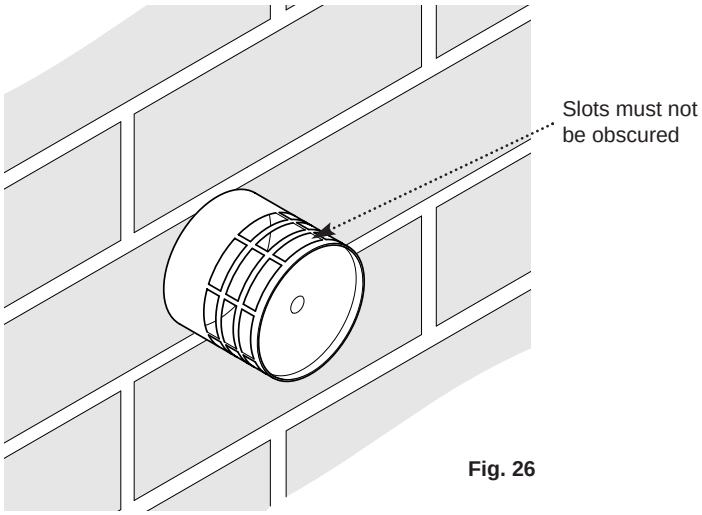


Fig. 26

8.6 Fitting the Flue (Cont)

10. The flue system can now be fitted. All burrs must be removed from any cut pipes to prevent damage to joint seals. Soap solution can be used to ease assembly of flue components.

11. The condensate collector must be fitted in the flue duct as shown and described in Section 7.11 (Fig. 24).

IMPORTANT: The 90° male - male elbow supplied with the condensate collector must be included in the flue duct system between the boiler and collector.

Separate Terminals

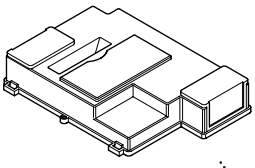
12. The two flue terminals must be fitted to the final section of each duct before completion.

13. Ensure that the final section of the flue and air ducts are cut to such a length that when the terminals are fitted they protrude through the outside wall(s). None of the slots in the terminal must be obscured (Fig. 26).

14. Drill two 3mm holes 15mm from the end of each final length of flue duct. The holes must be diametrically opposite each other. Using the screws supplied attach the terminals to the ducts (Fig. 25).

Single Vertical Terminal

15. If the roof terminal (part no. 246140) is to be used the twin flue roof terminal adaptor must also be used (part no. 247922).



Control Box Cover

Fig. 28

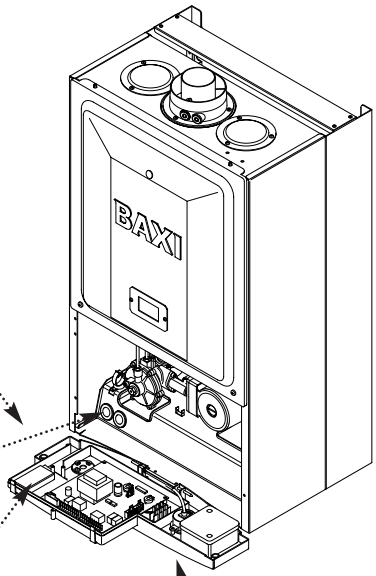


Fig. 27

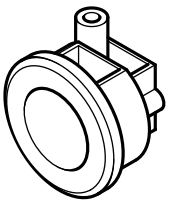
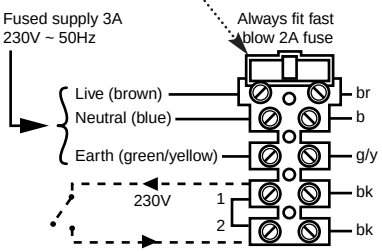


Fig. 29

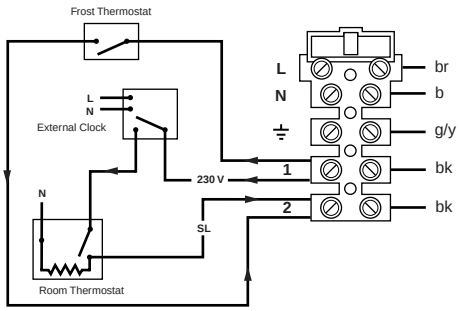
Cable Clamp

Facia Panel

Fuse



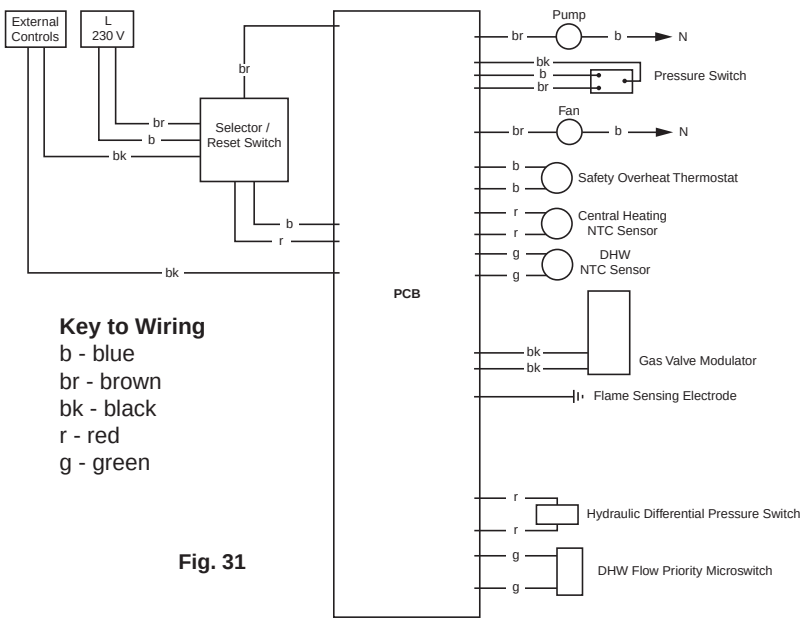
Terminal Block



IMPORTANT: If an integral timer is fitted to the boiler an external frost thermostat wired as shown will not operate correctly. Only external timers may be used in such installations, as in the diagram.

Fig. 30

Functional Flow Diagram



Key to Wiring
b - blue
br - brown
bk - black
r - red
g - green

Fig. 31

8.0 Installation

8.7 Making The Electrical Connections

To connect the mains input cable proceed as follows:-

1. Slacken the facia securing screws and lift the outercase panel so that its securing tabs are clear of the facia. Remove the panel.

2. Remove the screws securing the facia panel and hinge it down (Fig. 27).

3. Remove the control box cover securing screws. Disengage the barbs on the control box from the cover. Remove the cover (Fig. 28).

4. Slacken the cable clamp on the LH side of the boiler chassis (Fig. 29). Insert the cable through the clamp and route it to the terminal block.

5. Slacken the screws in the terminal block, connect the input cable, and tighten the screws.

6. If an external control is to be connected it can be done at this point. Run the input cable from the external control through the second cable clamp on the boiler chassis. Refer to the instructions supplied with the control.

7. To connect external control(s) remove the link between terminal 1 & 2. The 230V supply at terminal 1 can be connected to the external control. The switched output from the external control must be connected to terminal 2 (Fig. 30).

NOTE: If the room thermostat being used incorporates an anticipator it **MUST** be wired as shown in Fig. 30.

IMPORTANT: The external control **MUST** be suitable for 230V switching.

8. Ensure that both mains input and, where fitted, external control input cables have sufficient slack to allow the control box to drop down. Tighten the cable clamp(s) on the boiler chassis.

9. If the optional integral timer is to be used it should be fitted at this point. Refer to the instructions supplied with the timer. **NOTE:** An external frost thermostat cannot be used with the integral timer.

8.8 Preliminary Electrical Checks

1. Prior to commissioning the boiler preliminary electrical system checks should be carried out.

2. These should be performed using a suitable meter, and include checks for Ground Continuity, Resistance to Ground, Short Circuit and Polarity.

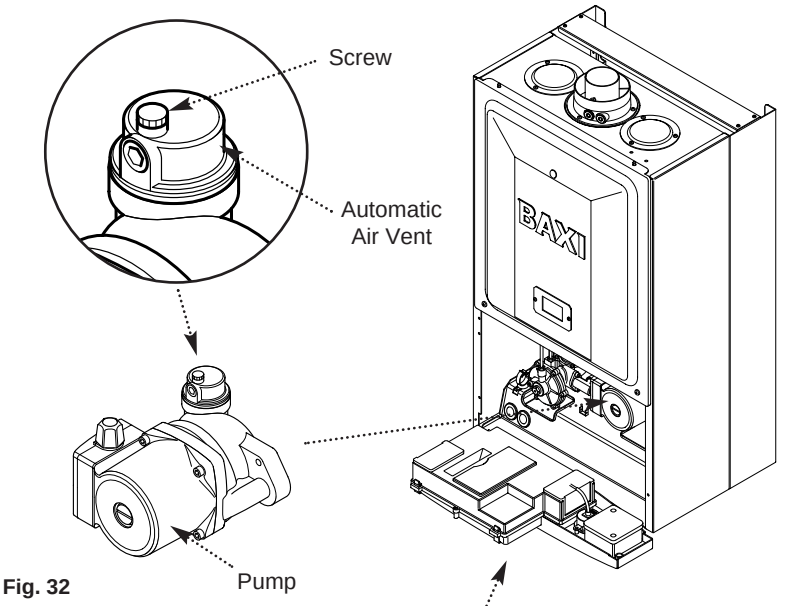


Fig. 32

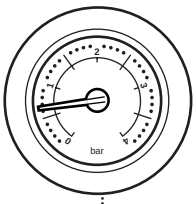


Fig. 33

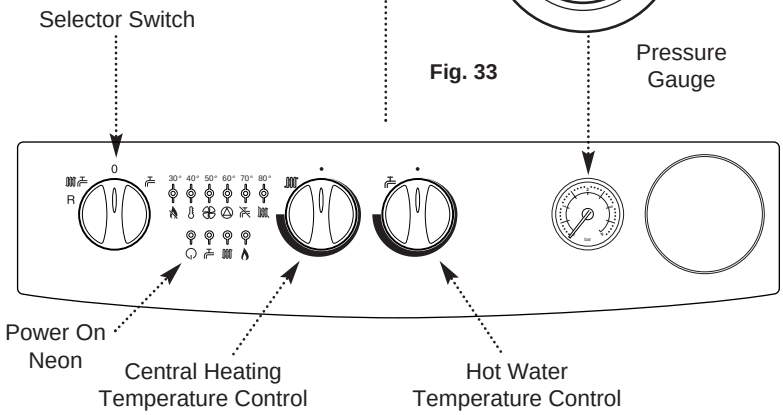


Fig. 34

9.0 Commissioning the Boiler

9.1 Commissioning the Boiler

1. Reference should be made to BS 5449 when commissioning the boiler.

2. Open the mains water supply to the boiler.

3. Open all hot water taps to purge the DHW system.

4. Ensure that the filling loop is connected and open, then open the heating flow and return valves on the boiler.

5. Open the screw on the automatic air vent (Fig. 32).

6. The system must be flushed in accordance with BS 7593 (see Section 6.2) and the flushing agent manufacturers instructions.

7. Pressurise the system to approximately 0.5 bar (Fig. 33). Close and disconnect the filling loop.

8. Turn the gas supply on and purge the system according to BS 6891.

9. Test for gas soundness.

10. If at any time during commissioning it is required to terminate a particular cycle, e.g. the pump overrun period, turn the selector to the OFF position and then back to either (♨) or (♨) (Fig. 34).

9.0 Commissioning the Boiler

9.2 Checking the Burner Pressure

1. Turn on the gas and electrical supplies to the boiler and ensure that all external controls are calling for heat.

2. Set the hot water temperature control to maximum and the selector switch to the OFF position (Fig. 37).

3. Slacken the pressure test point sealing screw and connect a pressure gauge. Disconnect the sensing pipe from the spigot adjacent to the pressure test point (Fig. 35).

4. Turn the selector switch fully anticlockwise against the spring pressure to position R and hold for 2 seconds to reset the boiler.

5. Turn the selector switch to the Domestic Hot Water position and open a hot water tap to give a flow rate of at least 10l/min.

6. Remove the plastic cap and using a suitable spanner adjust the brass nut to give a maximum output setting pressure of 10.6 mbar (Fig. 36).

7. Disconnect one of the modulator wires from the gas valve. Adjust the red screw to achieve the correct minimum output setting pressure of 1.9 mbar (Fig. 36a).

8. Turn the boiler off and reassemble in reverse order. Tighten the pressure test point sealing screw and reconnect the sensing pipe.

9. The system should then be flushed again in accordance with BS 7593 and the flushing agent or inhibitor manufacturers instructions.

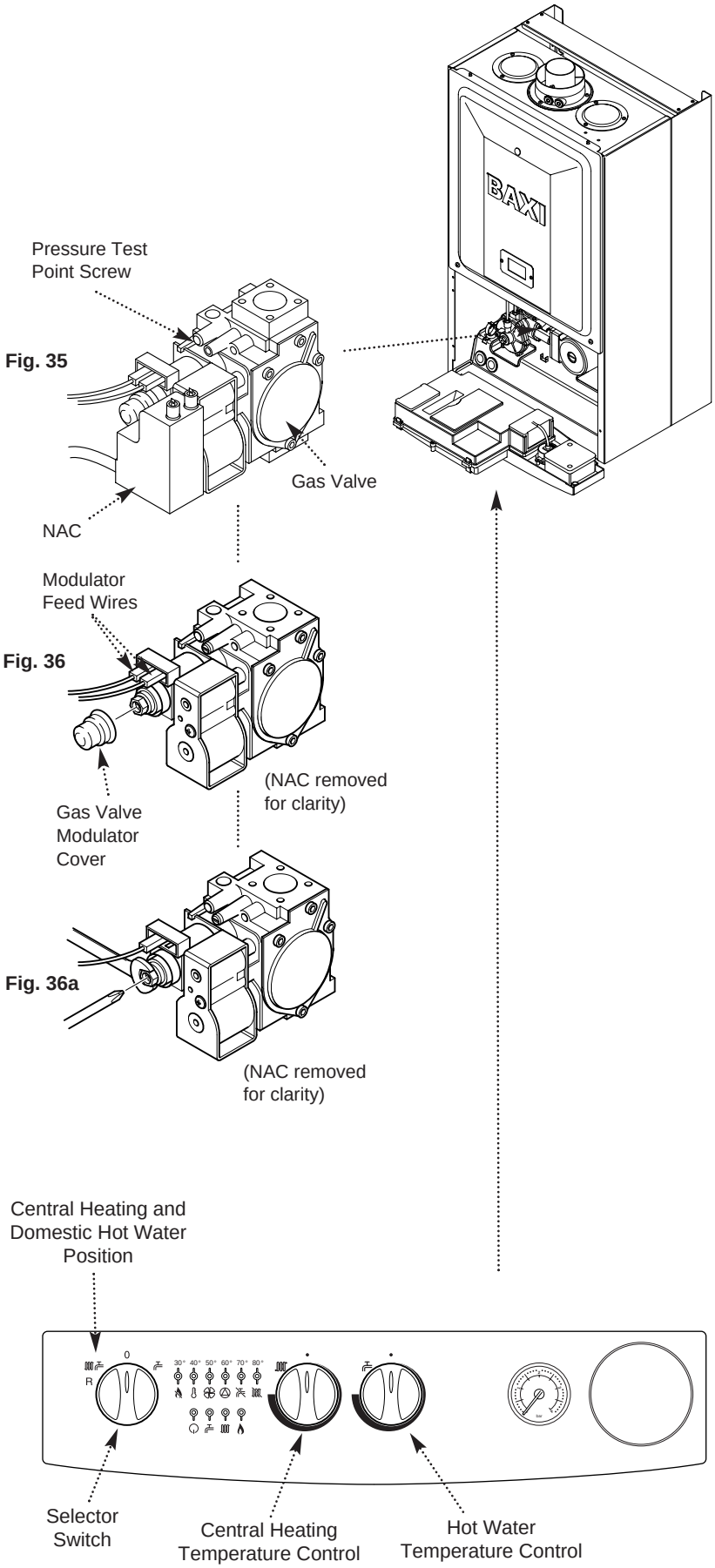


Fig. 35

Fig. 36

Fig. 36a

Fig. 37

10.0 Completion

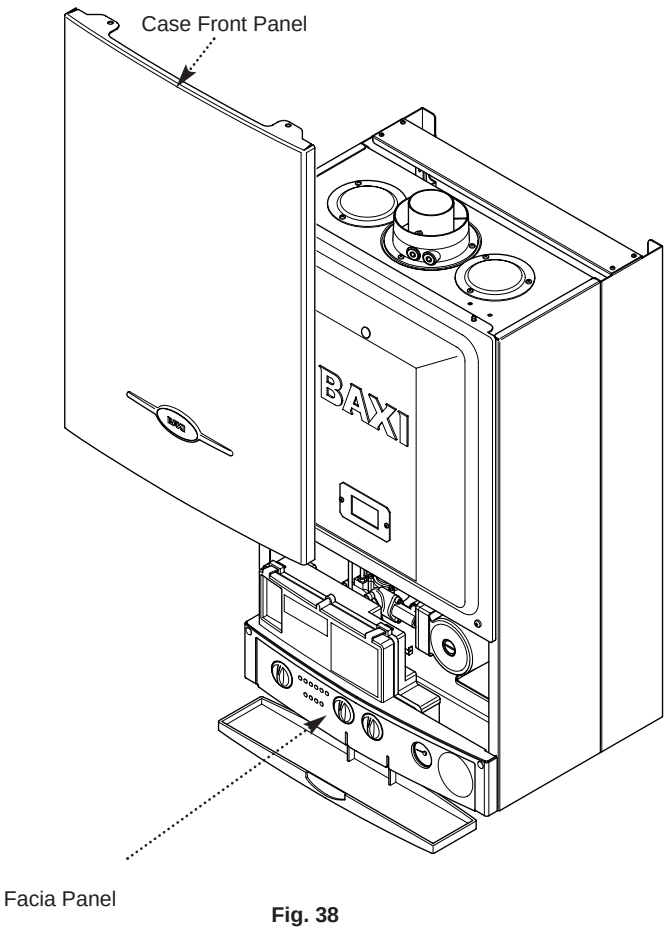


Fig. 38

10.1 Completion

1. Hinge the facia panel upwards and refit the case front panel. Secure them with the screws previously removed (Fig. 38).

2. Instruct the user in the operation of the boiler and system, explaining the operational sequence.

3. Carefully read and complete all sections of the “Benchmark” Installation, Commissioning and Service Record Log Book that are relevant to the appliance and installation. The details of the Log Book will be required in the event of any warranty work. The Log Book must be handed to the user for safe keeping and each subsequent regular service visit recorded.

4. Hand over the Users Operating, Installation and Servicing Instructions and the Log Book, giving advice on the necessity of regular servicing.

11.0 Servicing the Boiler

11 .1 Annual Servicing

1. For reasons of safety and economy, it is recommended that the boiler is serviced annually. Servicing must be performed by a competent person.

2. After servicing, complete the relevant section of the “Benchmark” Installation, Commissioning and Service Record Log Book. This should be in the possession of the user.

3. Ensure that the boiler is cool.

4. **Ensure that both the gas and electrical supplies to the boiler are isolated.**

5. Slacken the facia securing screws and lift the outercase panel so that its securing tabs are clear of the facia. Remove the panel (Fig. 39).

6. Remove the facia securing screws and hinge the facia panel down.

7. Remove the screws securing the inner door panel. Lift the panel slightly to disengage it from the studs on top of the case (Fig. 41).

8. Note the positions of the two sensing tubes on the outlet elbow and three wires on the fan motor and remove them (Fig. 40).

9. Slacken the screws on the outlet sealing collar. Ease the collar upwards as far as possible (Fig.40).

10. Remove the four screws securing the combustion box door and remove the door (Fig. 41).

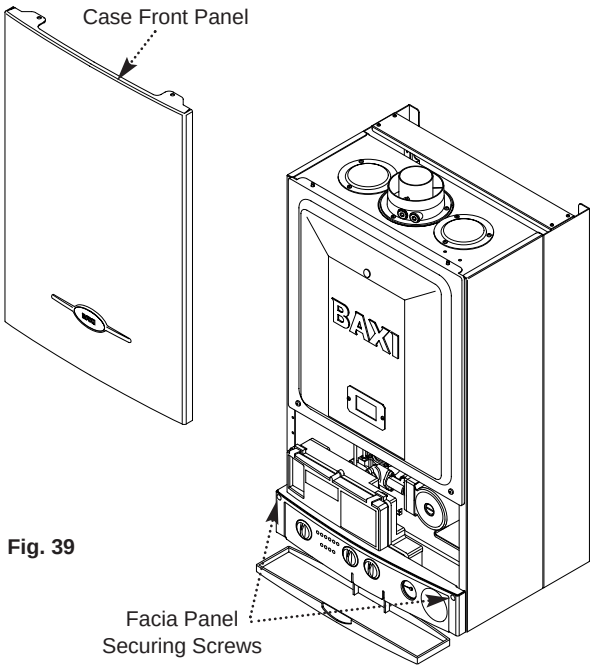


Fig. 39

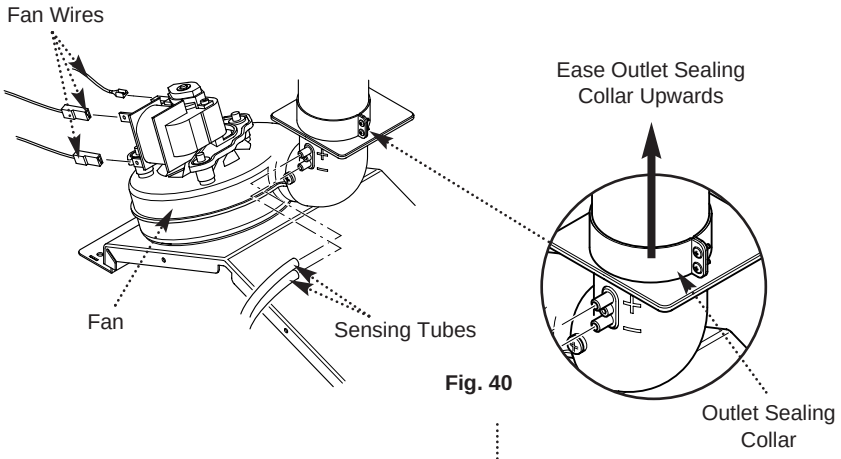


Fig. 40

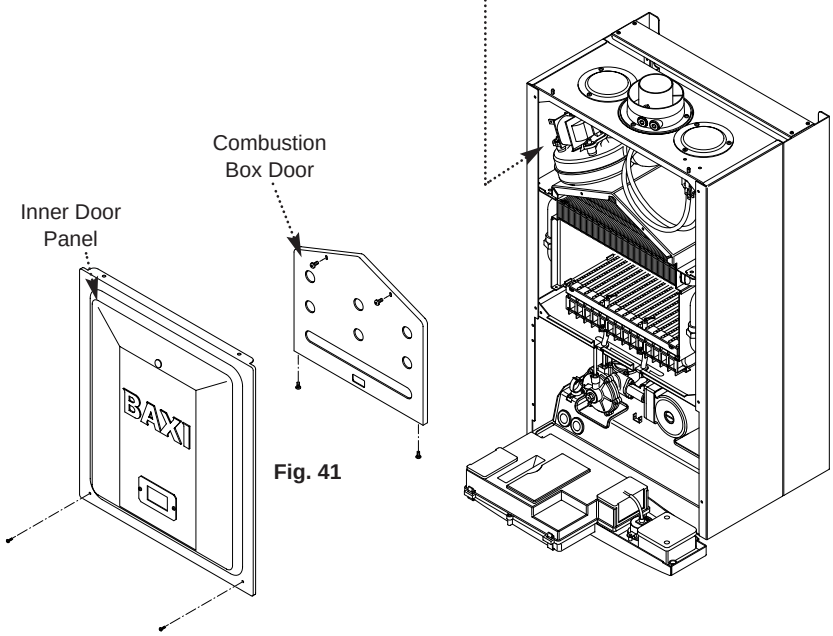


Fig. 41

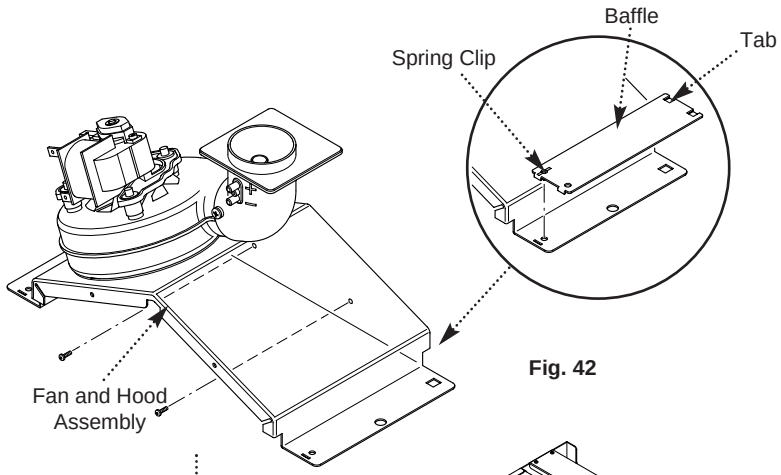


Fig. 42

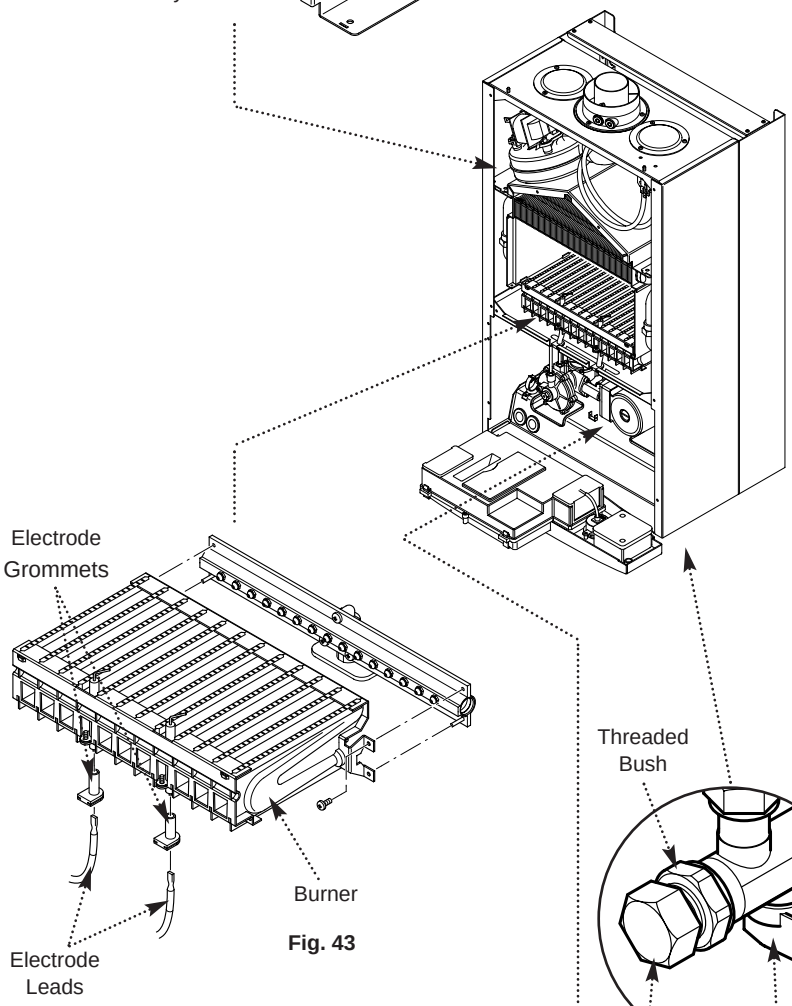


Fig. 43

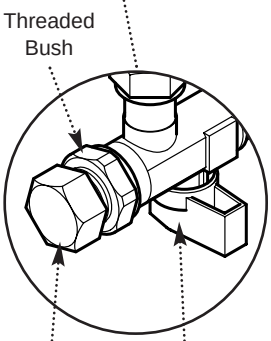


Fig. 44

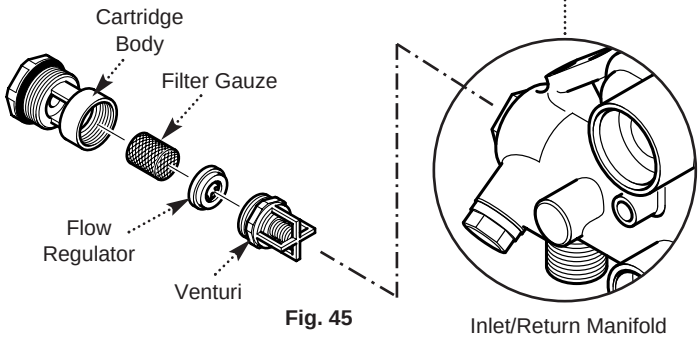


Fig. 45

11.0 Servicing the Boiler

11.1 Annual Servicing (Cont)

11. Remove the spring clips retaining the air box side baffle plates. Disengage the tabs on the baffles from the slots in the fan hood (Fig. 42).

12. Undo the screws securing the fan hood to the appliance back panel, and draw the fan and hood assembly forwards.

13. Draw the burner out of the combustion box, pulling the electrode grommets from the slots in the combustion box lower panel (Fig. 43).

14. Disconnect the electrode leads and grommets from the electrodes. Completely remove the burner (Fig. 43).

15. Brush any deposits from the injectors. Do not use a pin or wire to clean them.

16. Brush the burner blades and venturis and clean the combustion box.

17. Ensure that the heat exchanger fins are clear of any obstruction.

DHW Filter (Fig. 45)

18. If the flow of domestic hot water is diminished, it may be necessary to clean the filter.

19. Initially check the cold water inlet tap filter.

20. Turn the tap off. Undo the blanking cap and remove the threaded bush (Fig. 44).

21. Extract the filter and rinse thoroughly in clean water. Reassemble and check the flow. If required clean the manifold filter as described below.

22. Undo the filter cartridge from the inlet/return manifold.

23. Dismantle the cartridge and carefully remove the flow regulator and filter gauze. Rinse them thoroughly in clean water and reassemble in reverse order.

24. Check that the pressure vessel charge is 0.5bar and reassemble in reverse order of dismantling.

25. Turn the selector switch fully anticlockwise against the spring pressure to position R and hold for 2 seconds to reset the boiler before recommissioning.

26. Complete the relevant section of the “Benchmark” Installation, Commissioning and Service Record Log Book and hand it back to the user.

12.0 Changing Components

IMPORTANT: When changing components ensure that both the gas and electrical supplies to the boiler are isolated before any work is started. When the new component has been fitted turn the selector switch fully anticlockwise against the spring pressure to position R and hold for 2 seconds to reset the boiler before recommissioning.

See Section 11.1 “Annual Servicing” for removal of case panel, door etc.

12.1 Pressure Switch (Fig. 46)

1. Note the positions of the two sensing tubes and three wires and remove them.

2. Remove the two screws holding the pressure switch to the combustion box top panel.

3. Fit the new pressure switch and reassemble all components in reverse order of dismantling.

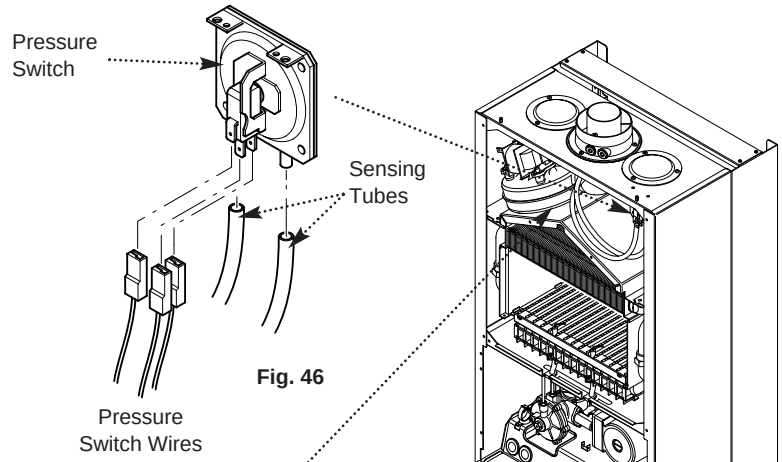


Fig. 46

12.2 Fan (Figs. 47 & 48)

1. Note the positions of the two sensing tubes on the outlet elbow and three wires on the fan motor and remove them.

2. Slacken the screws on the outlet sealing collar. Ease the collar upwards as far as possible.

3. Remove the four screws securing the combustion box door and remove the door.

4. Remove the spring clips retaining the air box side baffle plates. Disengage the tabs on the baffles from the slots in the fan hood.

5. Undo the screws securing the fan hood to the appliance back panel, and draw the fan and hood assembly forwards.

6. Remove the screws and spring washers securing the fan to the hood.

7. Fit the new fan to the hood using the screws and spring washers previously removed.

8. Reassemble in reverse order of dismantling.

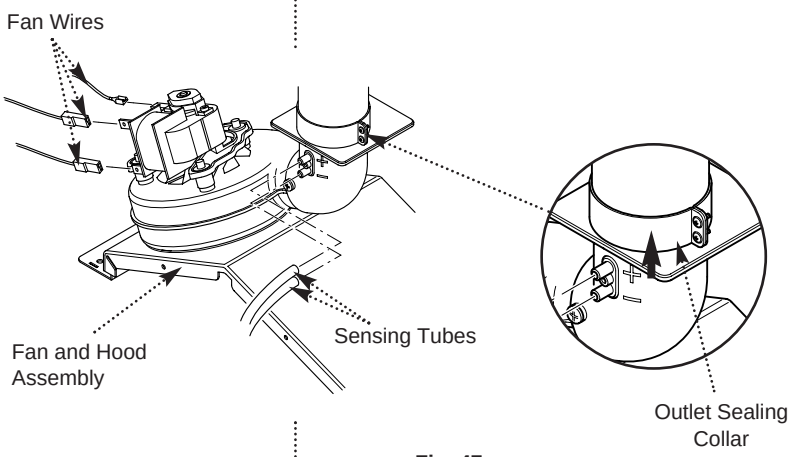


Fig. 47

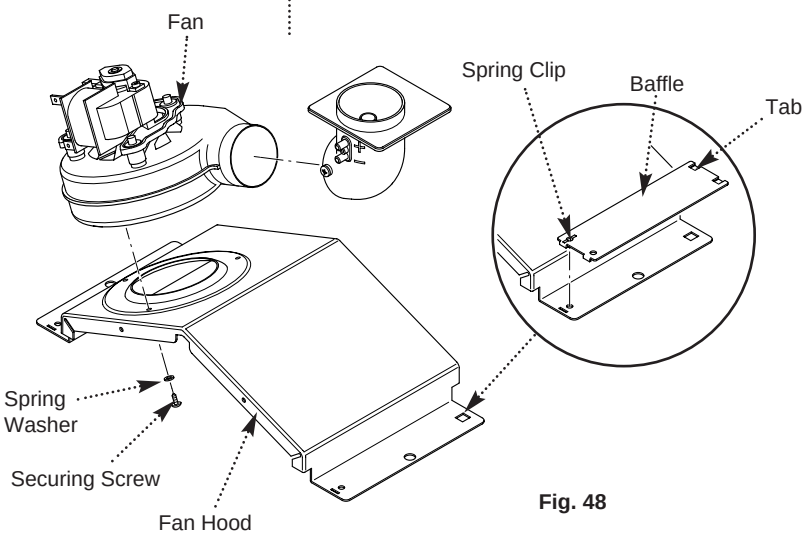


Fig. 48

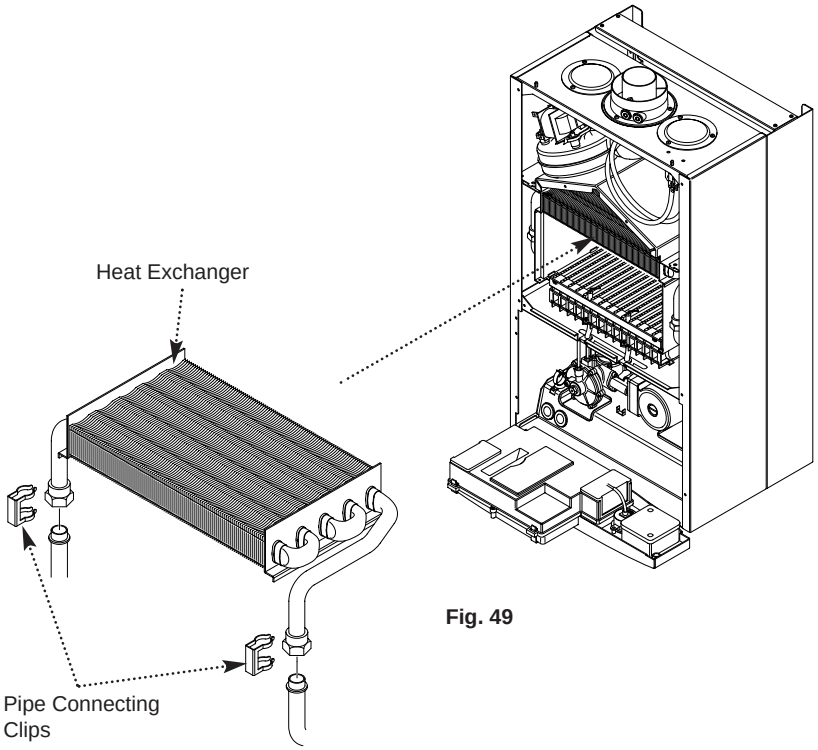


Fig. 49

12.3 **Heat Exchanger** (Fig. 49)

1. Note the positions of the two sensing tubes on the outlet elbow and three wires on the fan motor and remove them.

2. Slacken the screws on the outlet sealing collar. Ease the collar upwards as far as possible.

3. Remove the four screws securing the combustion box door and remove the door.

4. Remove the spring clips retaining the air box side baffle plates. Disengage the tabs on the baffles from the slots in the fan hood.

5. Undo the screws securing the fan hood to the appliance back panel, and draw the fan and hood assembly forwards.

6. Drain the primary circuit. Prise the two pipe connecting clips off the joints in the flow and return pipes.

7. Lift the heat exchanger to disconnect the flow and return pipe joints. Withdraw it from the appliance, taking care not to damage the rear insulation piece.

8. Fit the new heat exchanger.

9. Reassemble in reverse order of dismantling, and repressurise the system.

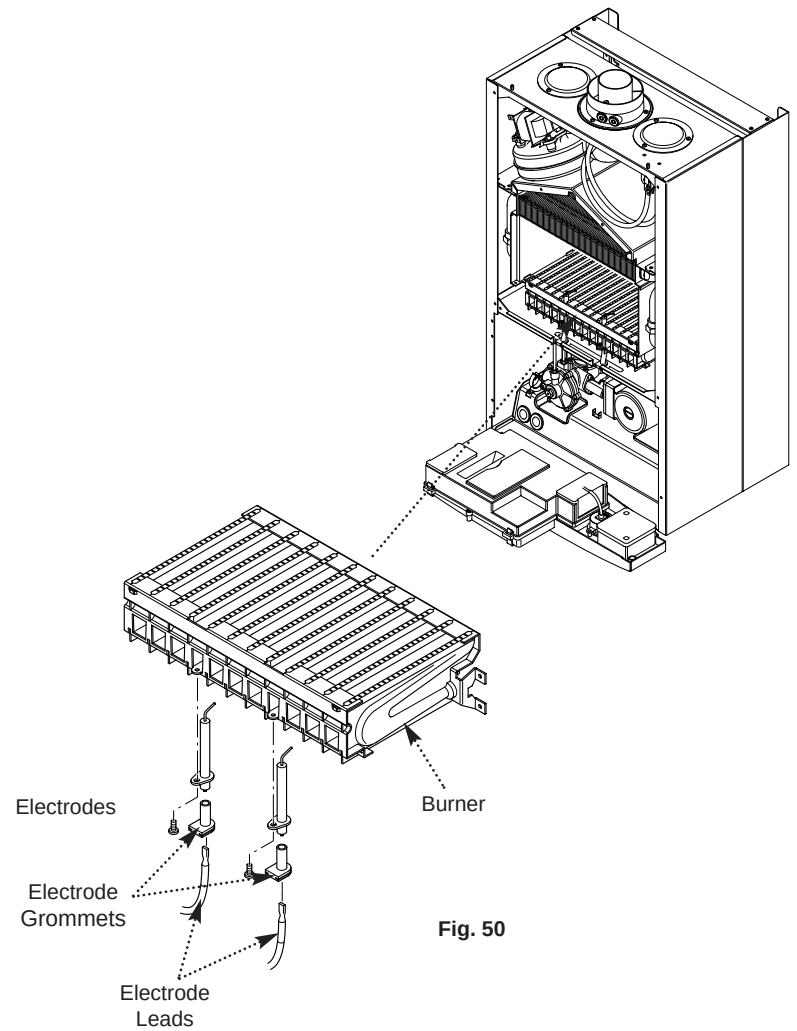


Fig. 50

12.4 **Burner** (Fig. 50)

1. Remove the four screws securing the combustion box door and remove the door.

2. Draw the burner out of the combustion box, pulling the electrode grommets from the slots in the combustion box lower panel.

3. Disconnect the electrode leads and grommets from the electrodes. Completely remove the burner.

4. Undo the screws securing the electrodes to the burner. Examine the condition of the electrodes, replacing if necessary. Fit the electrodes to the new burner.

5. Engage the burner location brackets over the studs on the injector manifold and reassemble in reverse order.

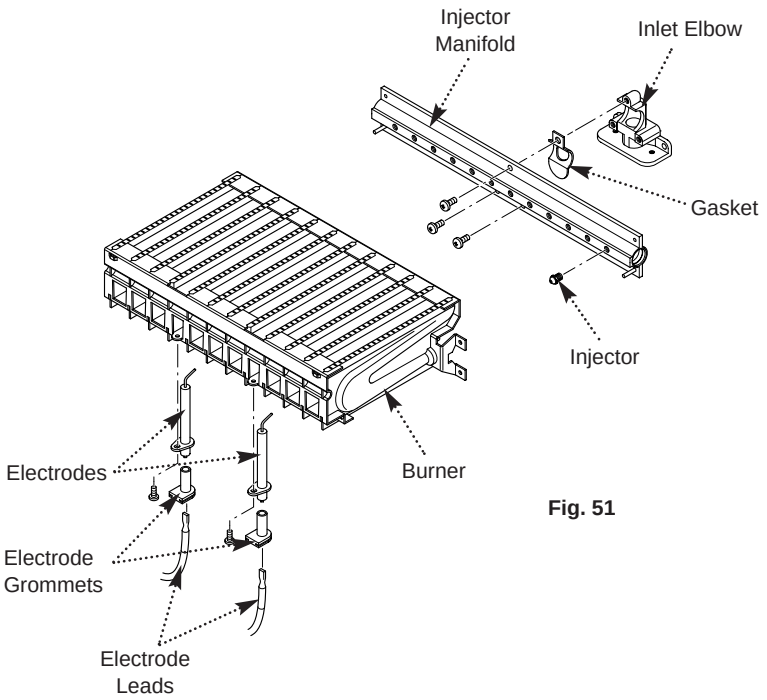


Fig. 51

12.5 Injectors (Fig. 51)

1. Remove the burner as described in Section 12.4.

2. Undo the screws securing the injector manifold to the inlet elbow and remove the manifold.

3. Unscrew and replace injectors as required and examine the sealing gasket, replacing as necessary. Reassemble in reverse order.

12.6 Electrodes (Fig. 51)

1. Remove the four screws securing the combustion box door and remove the door.

2. Undo the screws securing the burner to the injector manifold. Draw the burner out of the combustion box, pulling the electrode grommets from the slots in the combustion box lower panel.

3. Disconnect the lead and grommet from the electrode being replaced. Undo the securing screw and withdraw the electrode to the burner.

4. Reassemble in reverse order.

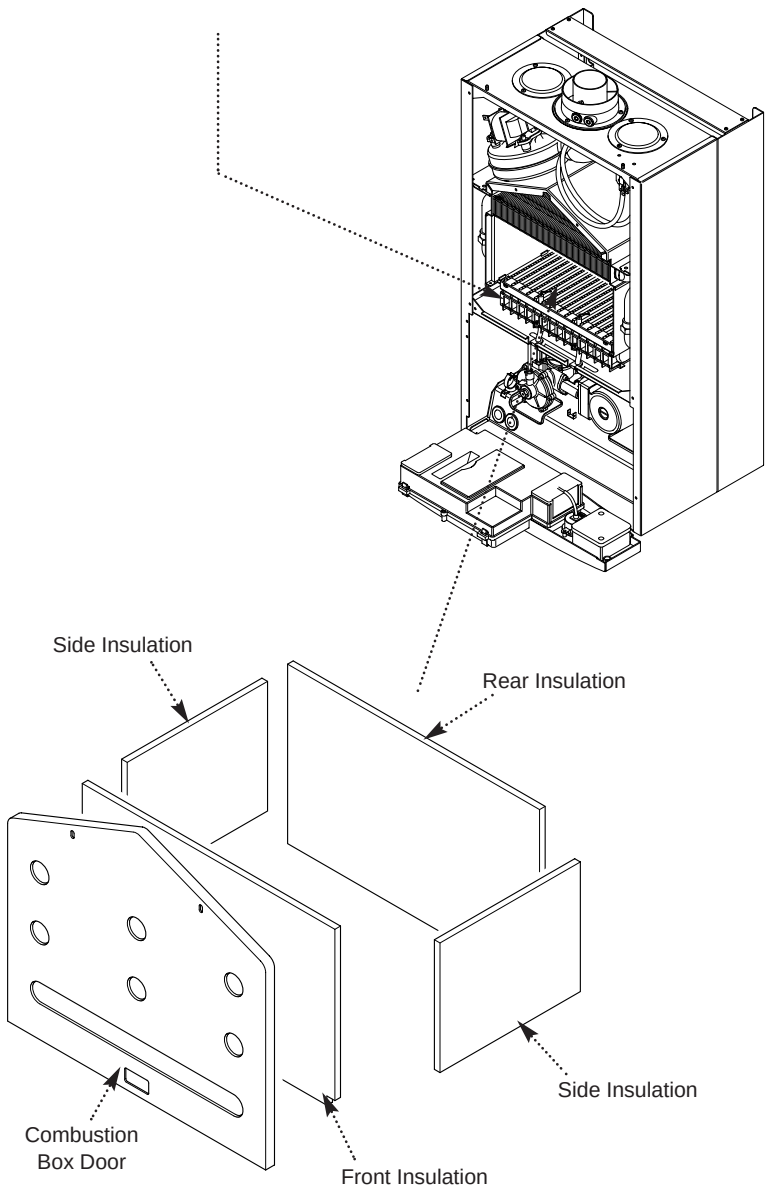


Fig. 52

12.7 Insulation (Fig. 52)

1. Remove the four screws securing the combustion box door and remove the door.

2. Slide the side insulation pieces can be out of their carriers.

3. To replace the rear insulation piece it is necessary to remove the heat exchanger as described in Section 12.3 and slide out the side pieces.

4. The combustion box door insulation piece can be replaced by carefully bending up the two retaining tabs.

5. Replace all insulation pieces and reassemble in reverse order.

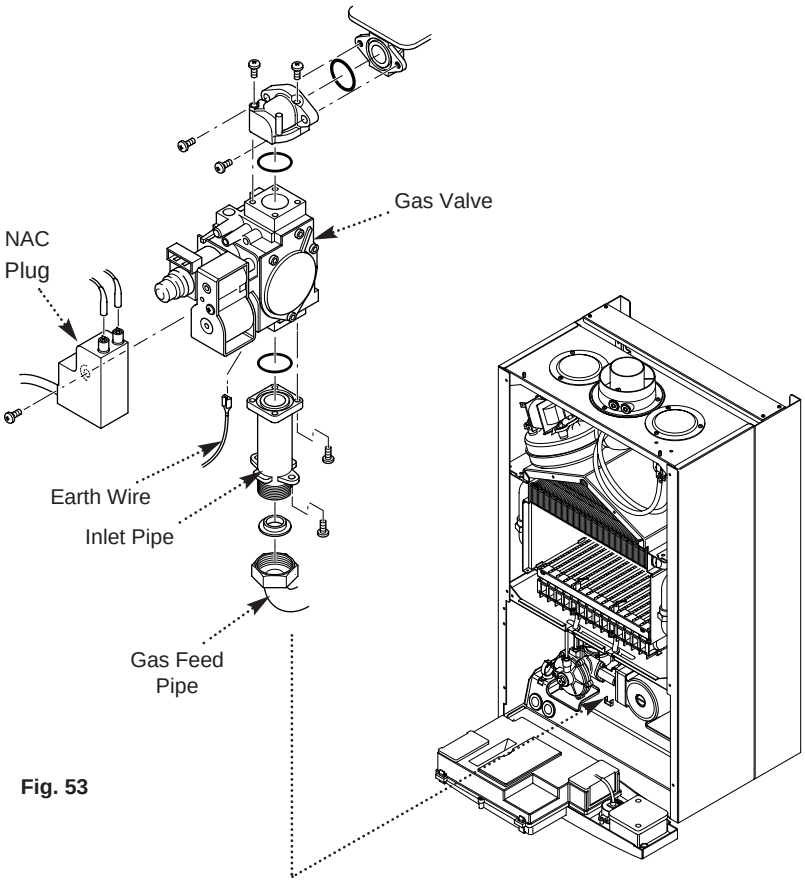


Fig. 53

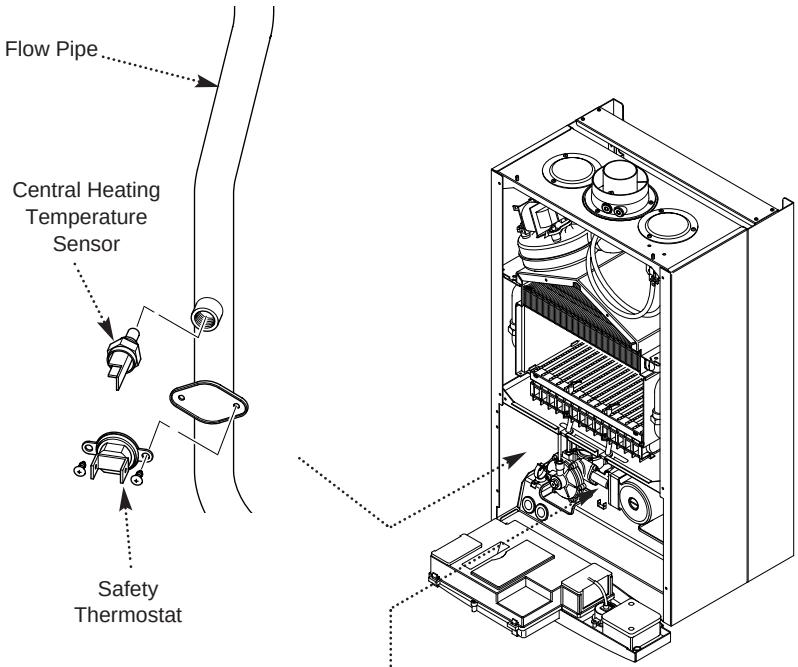


Fig. 54

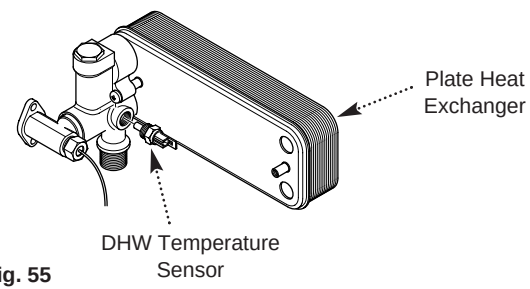


Fig. 55

12.8 Gas Valve (Fig. 53)

1. Undo the nut on the gas feed pipe under the boiler.

2. Disconnect the two wires from the valve modulator and the ignition lead from the NAC plug.

3. Disconnect the earth wire from the NAC plug and spade terminal on the gas valve body.

4. Undo the screw securing the NAC plug to the gas valve. Carefully pull the NAC forwards off the valve.

5. Remove the screws securing the inlet pipe flange to the boiler bottom panel and the screws securing the valve outlet manifold to the manifold inlet elbow.

6. Remove the valve from the boiler.

7. Note the orientation of the inlet pipe and outlet manifold. Undo the securing screws and remove the pipe and manifold.

8. Examine the 'O' ring seals for damage, replacing as necessary.

9. Fit the inlet pipe and outlet manifold to the new valve, ensuring that the 'O' ring seals are in place.

10. Reassemble in reverse order and check the pressure as described in Section 9.2.

12.9 Central Heating Temperature Sensor (Fig. 54)

1. Ease the retaining tab on the sensor away and disconnect the electrical plug.

2. Unscrew the sensor from it's pocket and reassemble in reverse order. The plug will only fit one way.

12.10 Safety Thermostat (Fig. 54)

1. Pull the two electrical connections off the thermostat.

2. Remove the screws securing the thermostat to the mounting plate on the flow pipe.

3. Reassemble in reverse order. The thermostat is not polarised - either wire can fit either terminal on the thermostat.

12.11 DHW Temperature Sensor (Fig. 55)

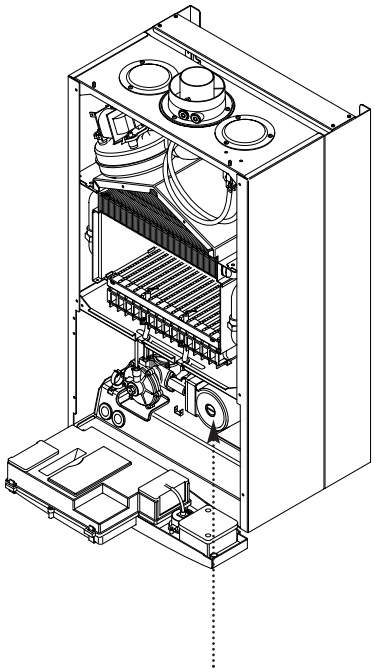
1. Turn off the mains water supply and draw off the residual domestic hot water.

2. Ease the retaining tab on the sensor away and disconnect the electrical plug.

3. Unscrew the sensor from the plate heat exchanger manifold. Examine the sealing washer, replacing if necessary.

4. Reassemble in reverse order. The plug will only fit one way.

12.0 Changing Components



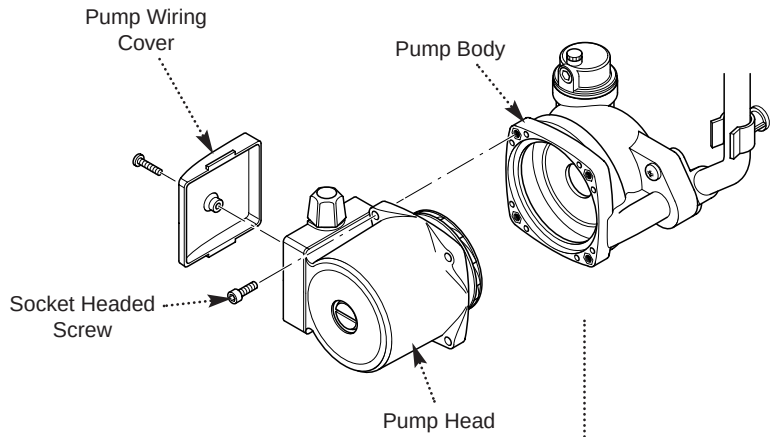


Fig. 56

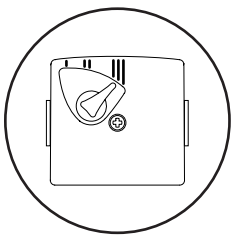


Fig. 57

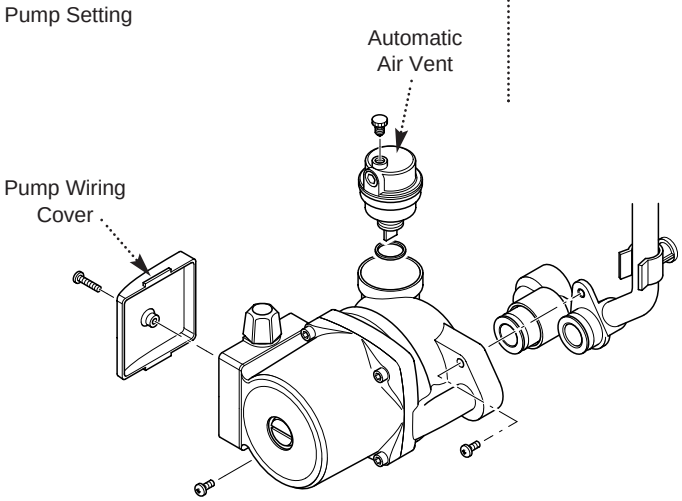


Fig. 58

12.12 Pump - Head Only (Fig. 56)

1. Drain the primary circuit and remove the socket head screws securing the pump head to the body and draw the head away.

2. Undo the screw on the pump wiring cover and remove the cover. Using a suitable flat bladed screw driver press the cable securing levers downwards to release each wire after noting their position.

3. A standard Grundfos replacement head can now be fitted. A Grundfos 15-50 head is suitable for the Combi 80e. The Combi 105e requires a 15-60 head. Connect the wiring to the new head. **The pump speed must be set to 3** (Fig. 57).

4. Reassemble in reverse order.

12.13 Pump - Complete (Fig. 56)

1. Drain the primary circuit and unscrew the automatic air vent from the pump body. Undo the two screws securing the body to the pipe and manifold and draw the pump forwards.

2. Undo the screw on the pump wiring cover and remove the cover. Using a suitable flat bladed screw driver press the cable securing levers downwards to release each wire after noting their position.

3. Connect the wiring to the new pump. Examine the ‘O’ ring seals on the return pipe and manifold, replacing if necessary.

4. Fit the air vent to the pump body and reassemble in reverse order.

12.14 Automatic Air Vent (Fig. 58)

1. Drain the primary circuit and unscrew the automatic air vent from the pump body.

2. Examine the ‘O’ ring seal, replacing if necessary, and fit it to the new automatic air vent.

3. Reassemble in reverse order.

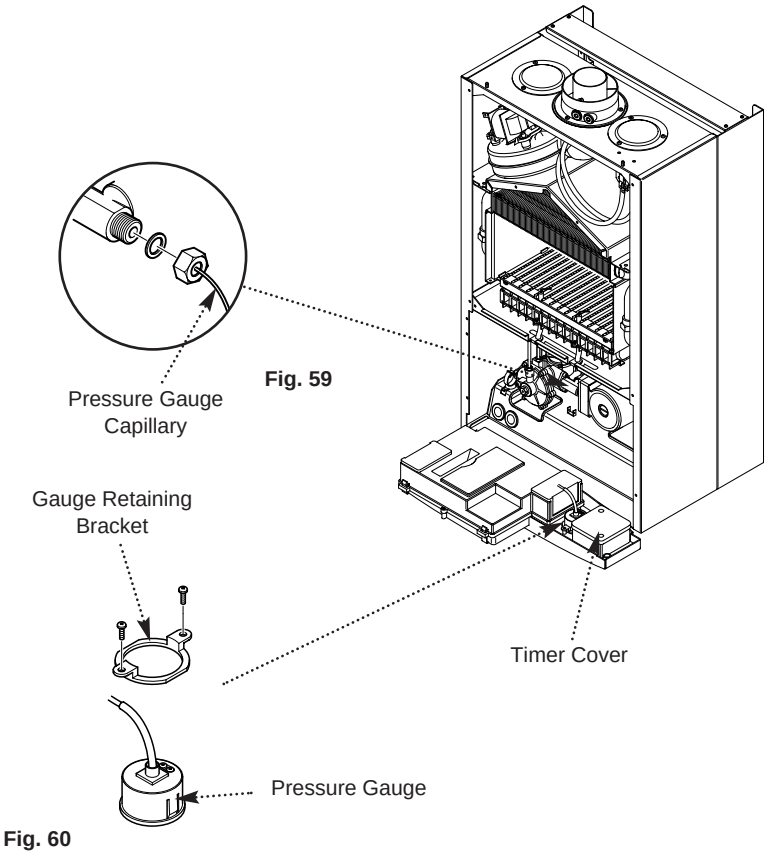


Fig. 59

Fig. 60

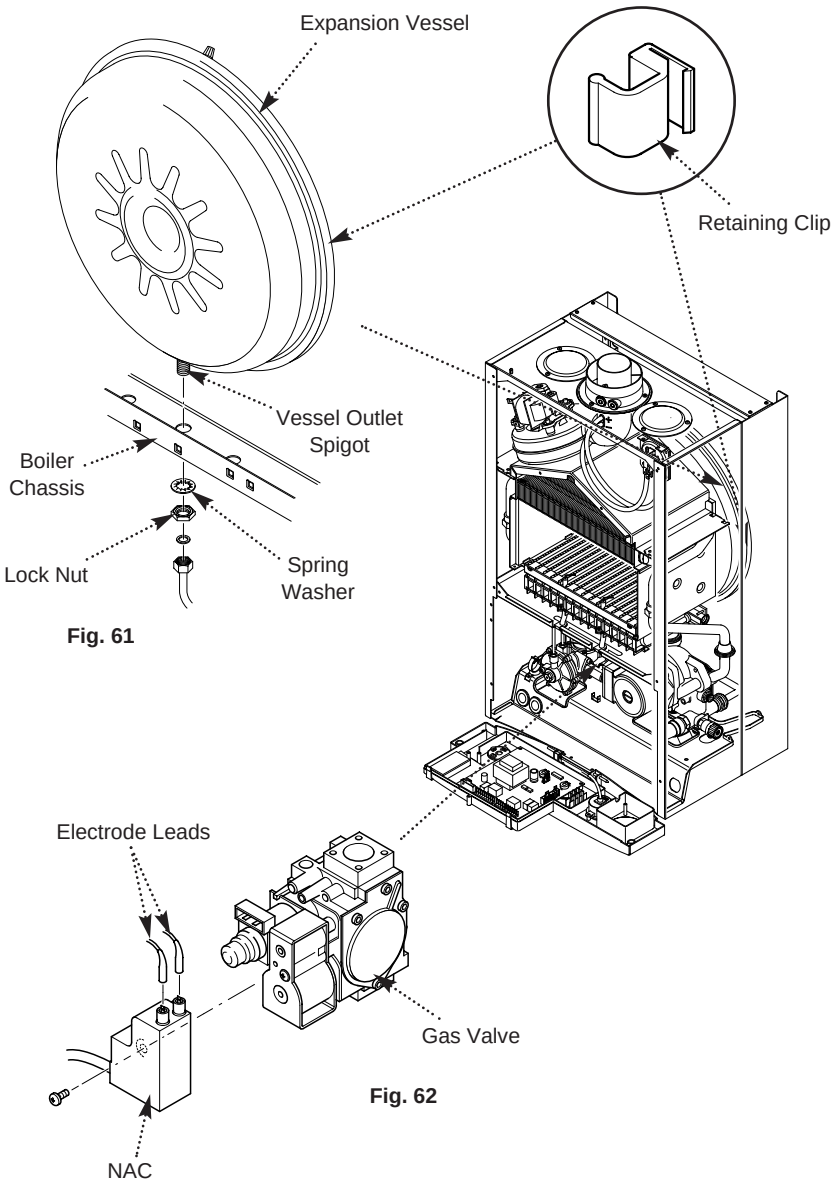


Fig. 61

Fig. 62

12.0 Changing Components

12.15 Pressure Gauge (Figs. 59 & 60)

1. Drain the primary circuit and undo the nut on the pressure gauge capillary.

2. Remove the timer cover and ease the timer wiring aside. Undo the screws securing the gauge retaining bracket.

3. Remove the bracket and gauge assembly. Depress the barbs on the side of the gauge and remove the retaining bracket.

4. Reassemble in reverse order.

12.16 Expansion Vessel (Fig. 61)

1. To replace the expansion vessel it is necessary to remove the boiler from the wall.

NOTE: Alternatively a vessel of equivalent capacity can be fitted on the system return pipe as close as possible to the boiler.

2. Drain the system and undo all gas and water connections. Remove the flue elbow.

3. Lift the boiler off the wall plate and lay it on it's side on a clean flat surface.

4. Undo the nut on the vessel outlet spigot, and remove the locknut and spring washer securing the spigot to the boiler chassis.

5. Undo the screws and remove the appliance upper cross member. Slide the expansion vessel out of the retaining clips.

6. Reassemble in reverse order. Fully recommission the appliance and system.

12.17 Spark Generator (Fig. 62)

NOTE: The spark generator is an integral part of the NAC gas valve plug.

1. Disconnect the ignition lead and earth wire from the NAC plug.

2. Remove the screw securing the NAC plug to the gas valve. Carefully pull the NAC forwards off the valve.

3. Remove the screws securing the control box cover and release the cover retaining barbs from their slots. Disengage the rear of the cover from the control box hinge pin.

4. Undo the earth strip securing screws. Lift the strip away from the control box.

5. Trace the NAC supply cable and disconnect the plug from the PCB.

6. Reassemble in reverse order, ensuring that all connections on the earth strip are secure.

12.0 Changing Components

12.18 Pressure Relief Valve (Fig. 63)

1. Drain the primary circuit.

2. Disconnect the discharge pipe from the valve. Using a suitable hexagon key undo the grub screw sufficiently to release the valve.

3. Note the orientation of the valve, rotate it and withdraw it from the manifold.

4. Fit the new valve and 'O' ring seal and set to the previously noted orientation. Reassemble in reverse order.

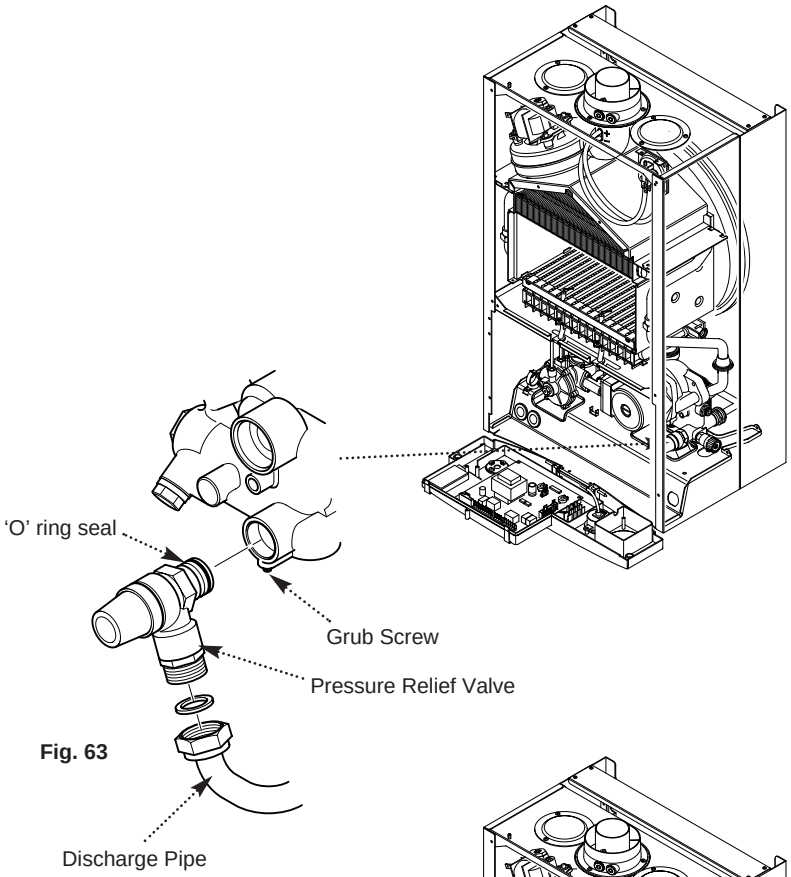


Fig. 63

12.19 P.C.B. (Fig. 65)

1. Note the settings of the temperature control knobs. Rotate the knobs fully anticlockwise and carefully pull them off the drive pins.

2. Remove the screws securing the control box cover and release the cover retaining barbs from their slots. Disengage the rear of the cover from the control box hinge pin (Fig. 64).

3. Note the position of all plugs and wires on the P.C.B. and disconnect them.

4. Undo the securing screws and remove the P.C.B. Transfer the control knob drive pins to the new P.C.B. and turn them fully anticlockwise.

5. Reassemble in reverse order, ensuring that the temperature controllers are reset to their previous positions.

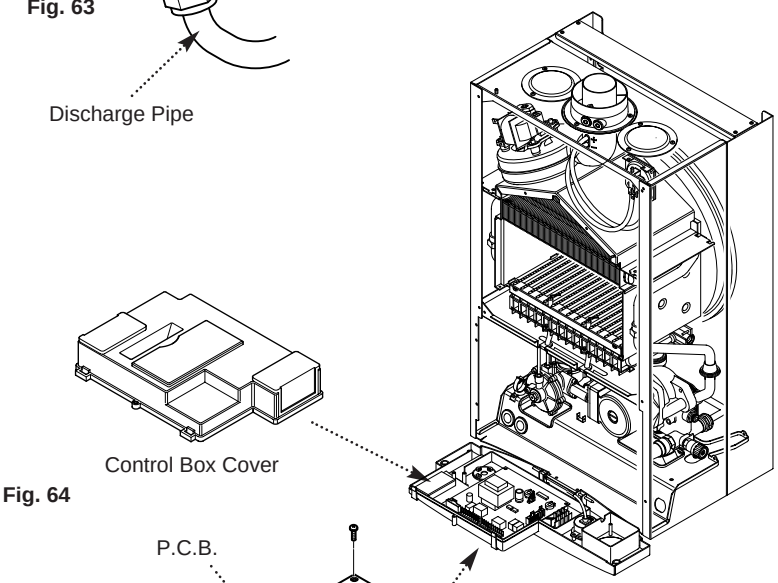


Fig. 64

12.20 Selector Switch (Fig. 65)

1. Note the setting of the selector switch knob and carefully pull it off the facia.

2. Remove the screws securing the control box cover and release the cover retaining barbs from their slots. Disengage the rear of the cover from the control box hinge pin.

3. Note the position of the electrical connections and the orientation of the switch. Remove the electrical connections.

4. Remove the screws securing the switch to the facia panel.

5. Fit the new switch, ensuring that it is correctly positioned and reassemble in reverse order.

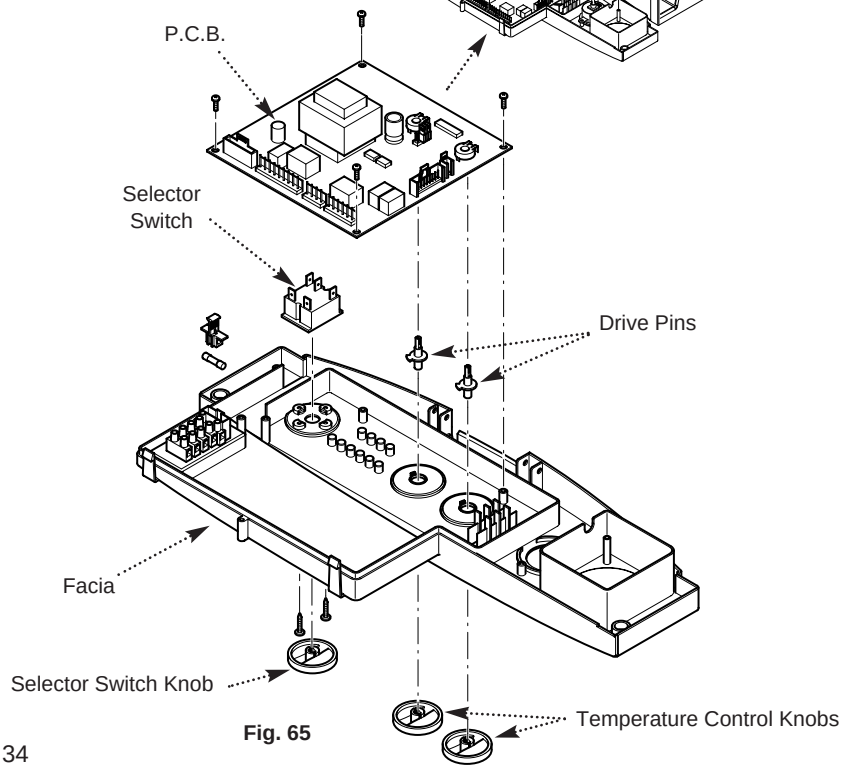


Fig. 65

12.0 Changing Components

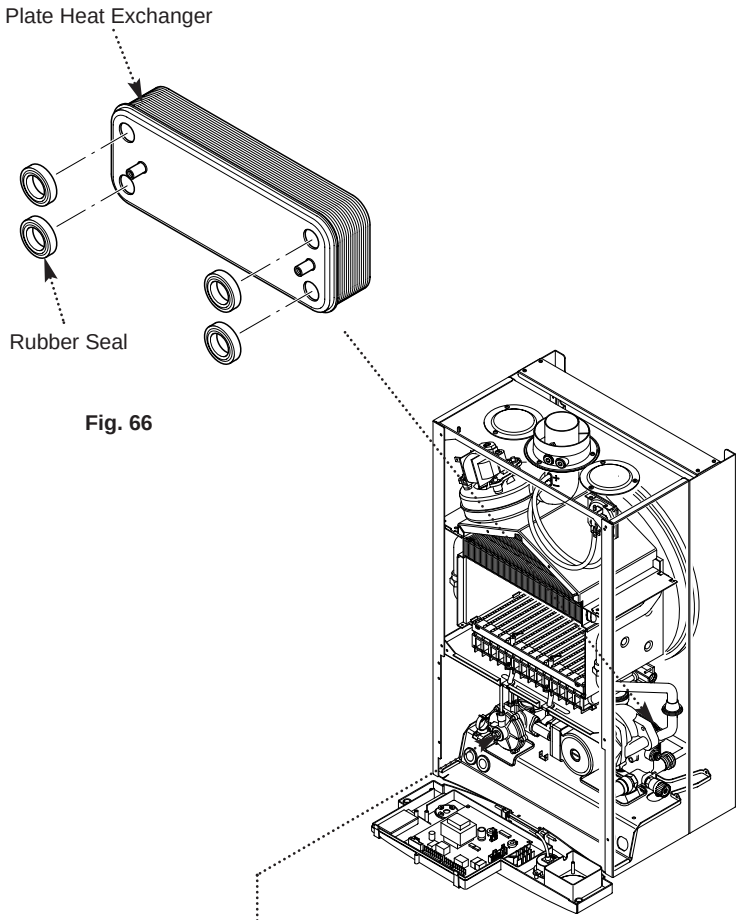


Fig. 66

12.21 Plate Heat Exchanger (Fig. 66)

1. Drain the primary circuit.

2. While supporting the heat exchanger undo the screws securing it to the brass manifolds.

3. Withdraw the heat exchanger upwards and to the left of the gas valve, taking care not to damage any wires or controls.

Seals

4. There are four rubber seals between the manifolds and heat exchanger which may need replacement.

5. Ease the seals out of the manifold. Replace carefully, ensuring that the seal is inserted into the manifold parallel and pushed fully in.

6. When fitting the new heat exchanger note that the left hand location stud is offset towards the centre more than the right hand one.

7. Reassemble in reverse order.

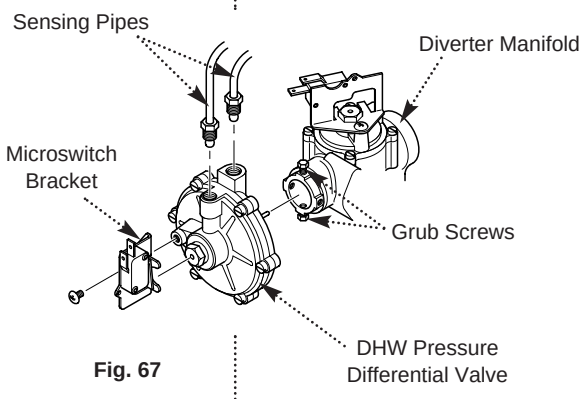


Fig. 67

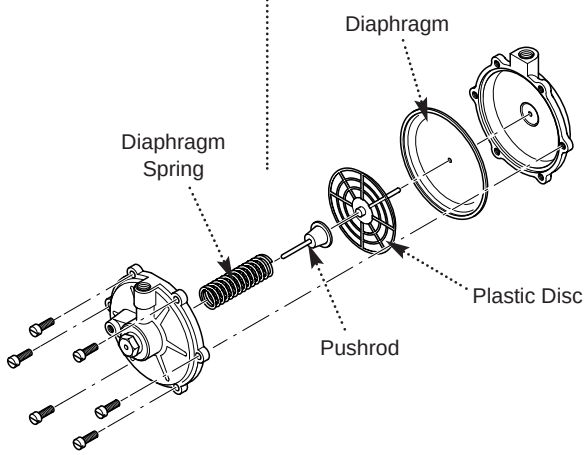


Fig. 68

12.22 Diverter Valve Assembly (Figs. 67 & 68)

The diverter valve assembly comprises of a hydraulic pressure differential sensor and a DHW flow sensor. These are connected to a manifold which is joined to the plate heat exchanger.

DHW Pressure Differential Valve (Fig. 68)

1. Drain the primary circuit.

2. Undo the screw securing the microswitch bracket to the sensor.

3. Disconnect the two sensing pipes and slacken the grub screws securing the valve to the diverter manifold.

4. Draw the valve away from the diverter manifold. The valve may now be replaced or split to examine the diaphragm.

5. To examine the diaphragm hold the valve body securely and carefully remove the six screws. The diaphragm spring will force apart the two halves of the valve.

6. Remove the plastic disc and pushrod assembly. Carefully examine the diaphragm and replace it if there is any damage.

7. Reassemble in reverse order.

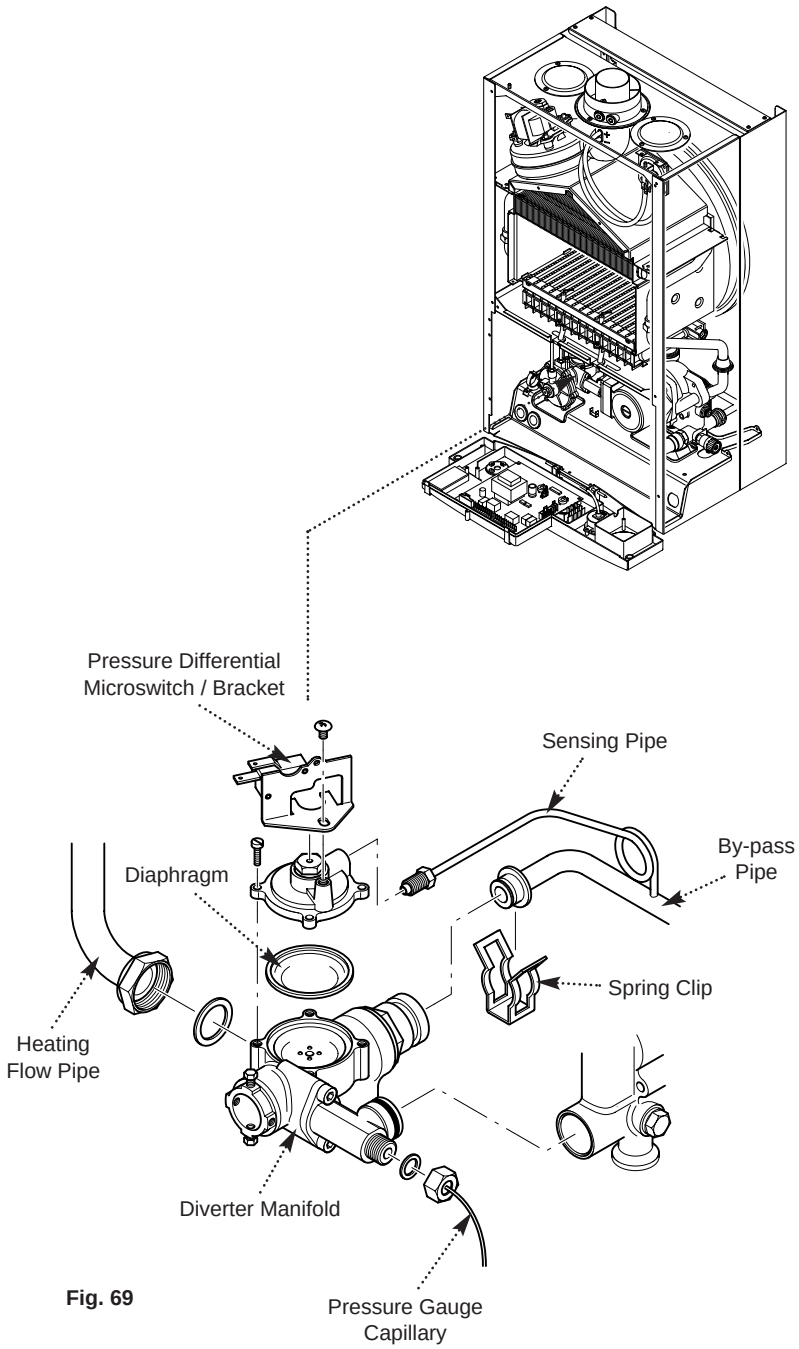


Fig. 69

12.22 Diverter Valve Assembly (Cont)

Pressure Differential Valve (Fig. 69)
1. Remove the DHW Flow Sensor as described above.

2. From the brass diverter manifold undo the nut on the heating flow valve. Remove the screw securing the diverter manifold to the appliance lower bracket.

3. Disconnect the pressure gauge capillary from the diverter manifold and remove the two wires from the Pressure Differential microswitch.

4. Prise off the spring clip securing the by-pass pipe to the diverter manifold and disconnect the sensing pipe.

5. Ease the diverter manifold out of the plate heat exchanger manifold. Remove the assembly from the appliance.

6. Undo the screw securing the microswitch bracket to the sensor. The sensor may now be dismantled to examine the diaphragm.

7. To examine the diaphragm hold the sensor securely and carefully remove the four screws. The diaphragm spring will force apart the two halves of the sensor.

8. Carefully examine the diaphragm and replace it if there is any damage.

9. Reassemble in reverse order.

Central Heating Pressure Microswitch
(Fig. 69)
1. Remove the two wires from the central heating pressure microswitch.

2. Undo the screw securing the microswitch bracket to the sensor.

3. Reassemble in reverse order.

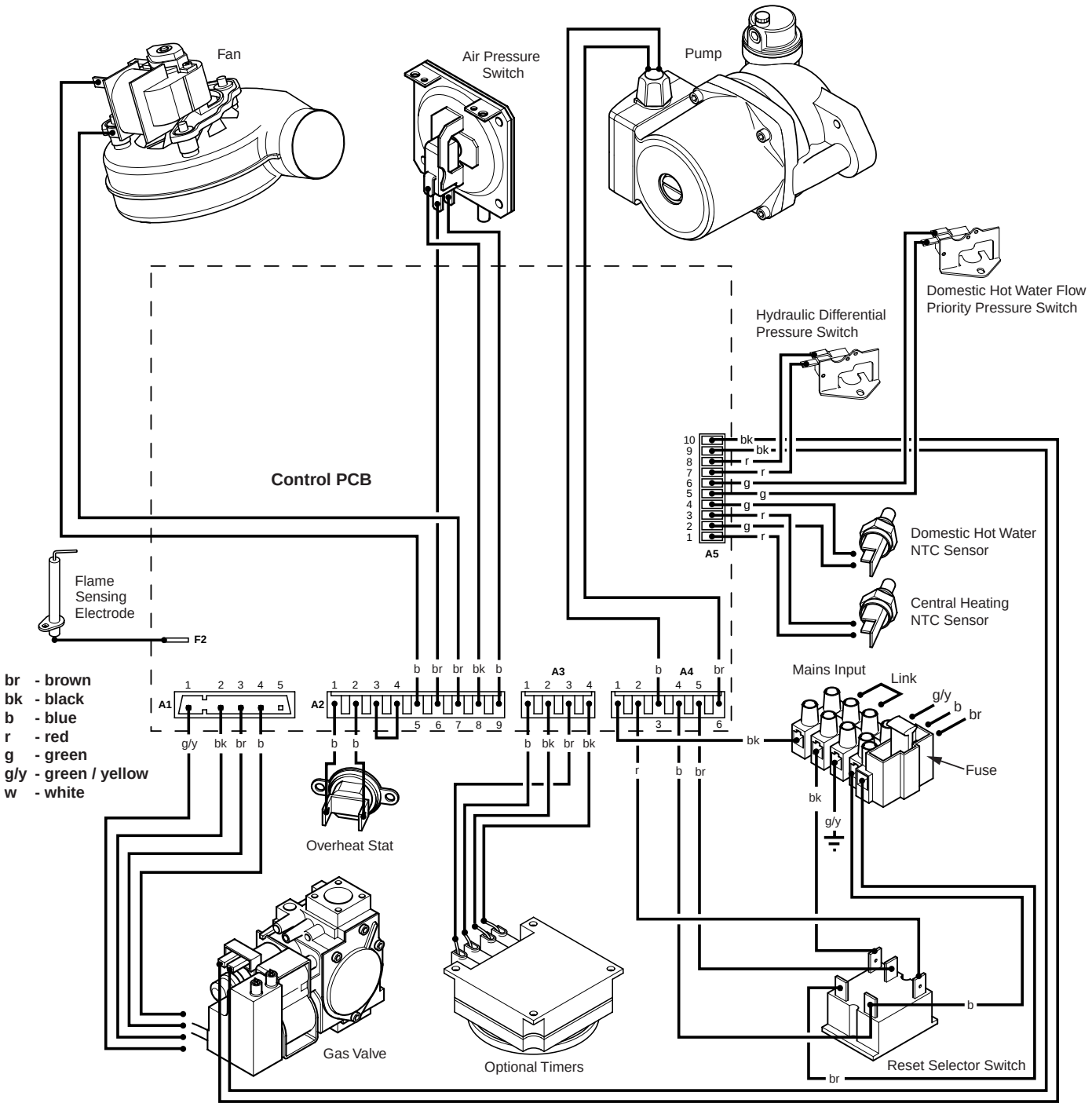
12.23 Flow Regulator

1. Undo the filter cartridge from the inlet/return manifold.

2. Unscrew the venturi and remove the flow regulator.

3. Check the cleanliness of the filter gauze, rinsing thoroughly in clean water as necessary. Fit the new flow regulator and reassemble in reverse order.

13.0 Illustrated Wiring Diagram



14.0 Fault Finding

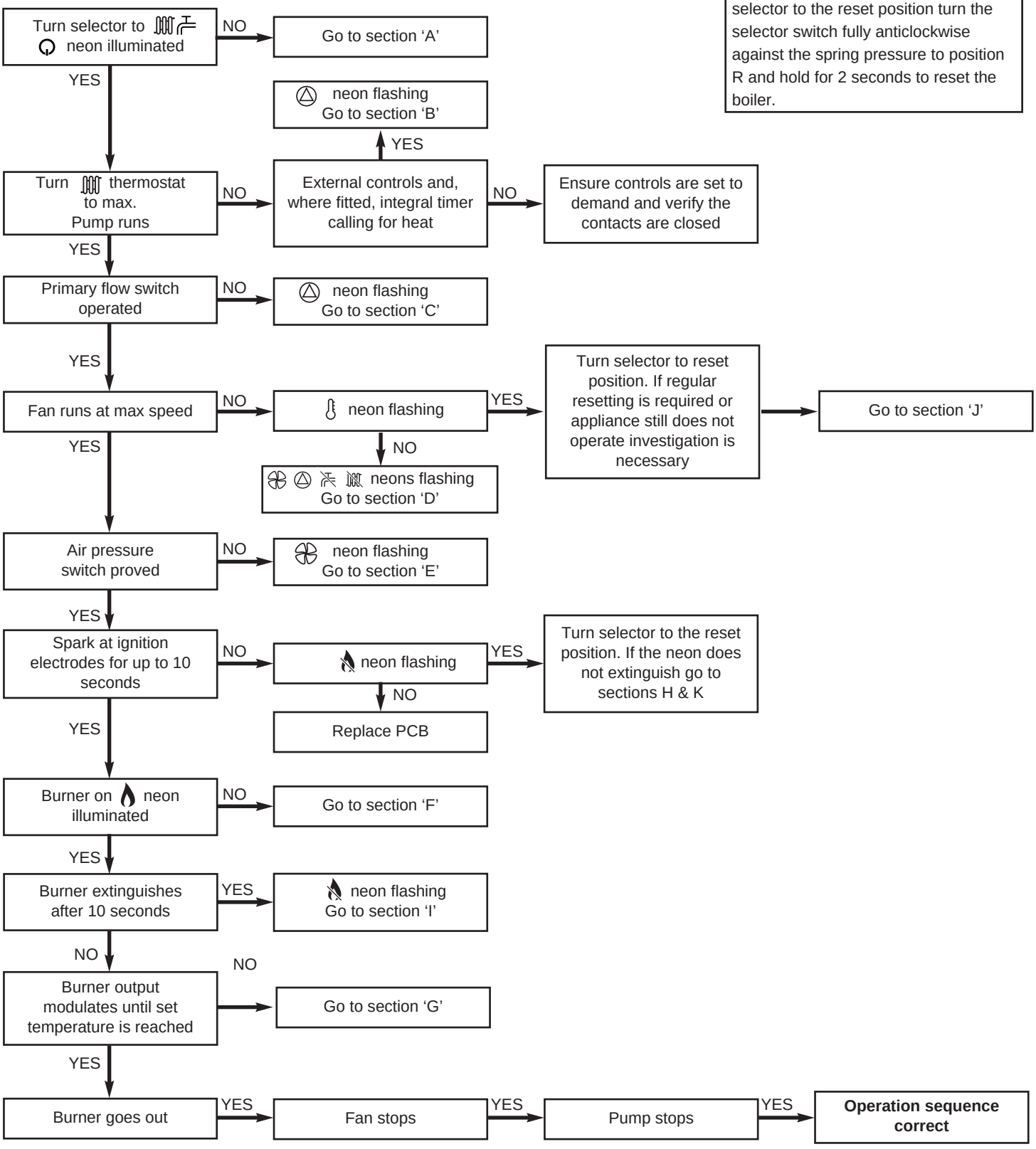
Carry out initial fault finding checks

1. Check that gas, water and electrical supplies are available at the boiler. Electrical supply = 230V - 50 Hz.
   CH water system pressurised to 0.5 bar when the boiler is cold. The preferred minimum gas pressure is 19.5mbar (natural gas), 27mbar (butane) or 36mbar (propane).
2. Carry out electrical system checks, i.e. Ground Continuity, Resistance to Ground, Short Circuit and Polarity with a suitable meter.
   NOTE: These checks must be repeated after any servicing or fault finding.
3. Ensure all external controls are calling for heat and check all external and internal fuses. Before any servicing or replacement of parts ensure the gas and electrical supplies are isolated.

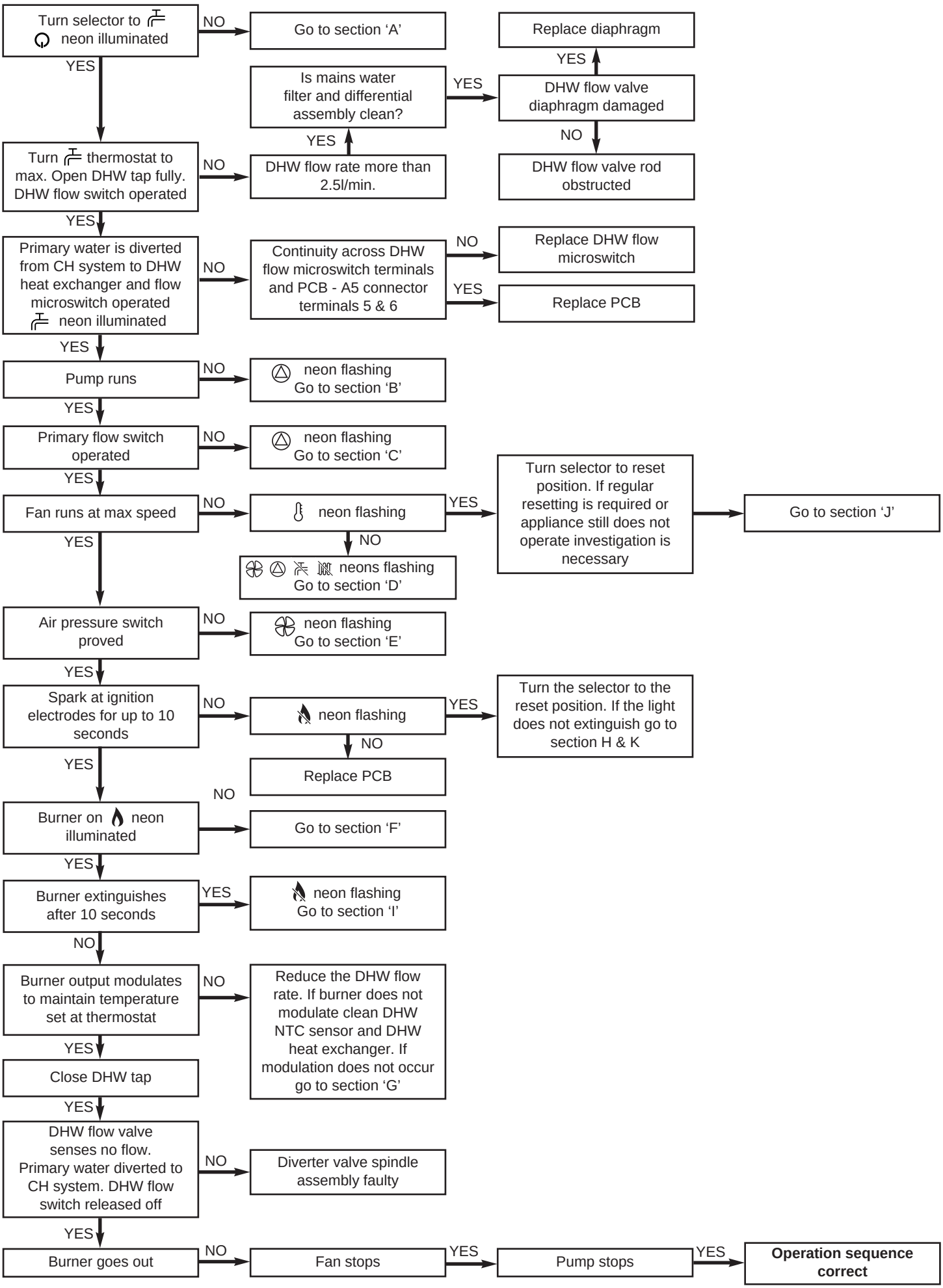
Refer to Section 13.0 “Illustrated Wiring Diagram” for position of numbered terminals

Central Heating - Follow operational sequence

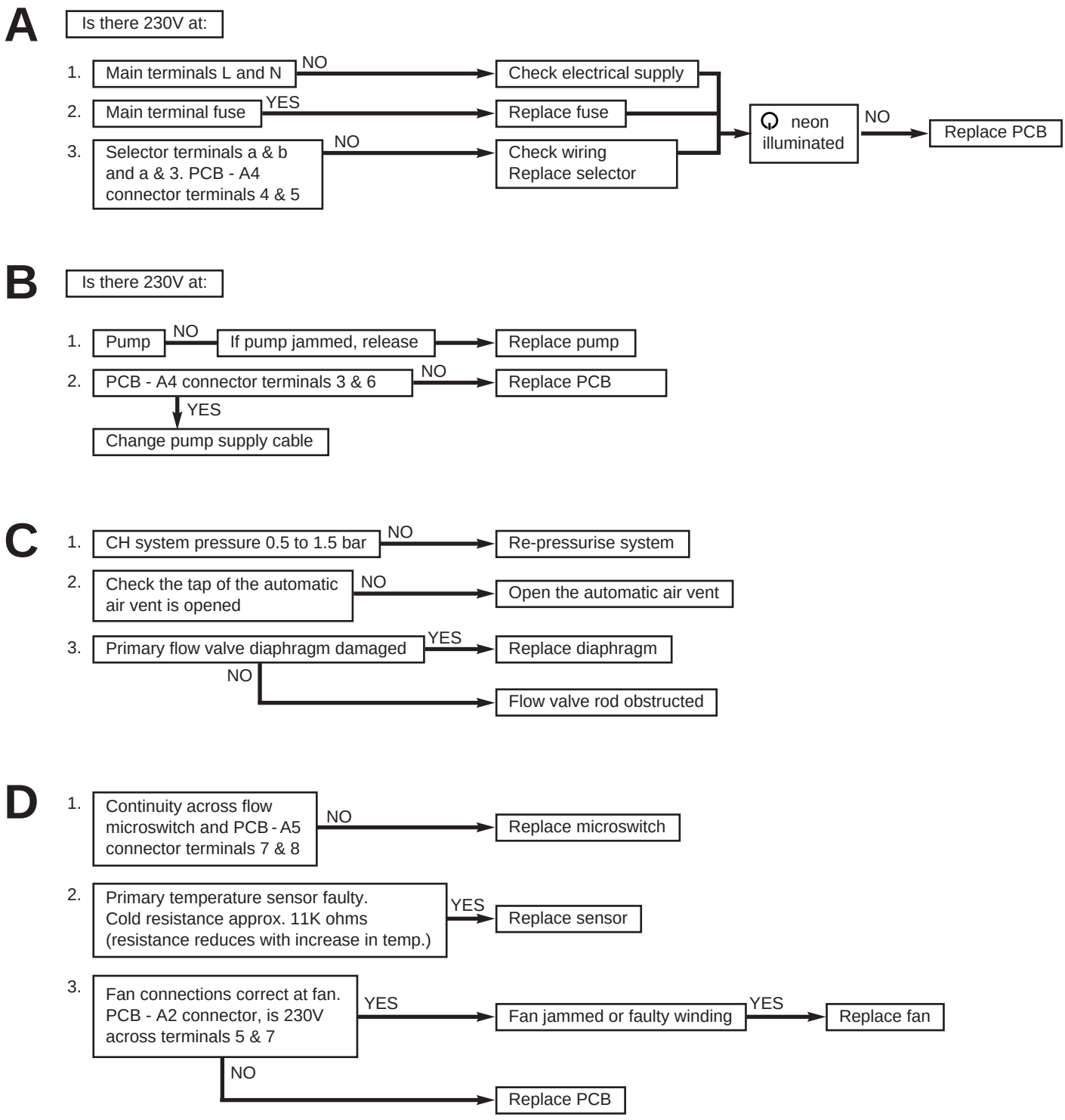
NOTE: When instructed to turn the selector to the reset position turn the selector switch fully anticlockwise against the spring pressure to position R and hold for 2 seconds to reset the boiler.



Domestic Hot Water - Follow operational sequence



Fault Finding Solutions Sections A to E



E

Check and correct if necessary
1. Electrical and pressure tube connections
2. Blockage of pressure tubes
3. Restriction in flue
4. Venturi

NO → Replace air pressure switch

F

Gas at burner → NO → Ensure gas is on and purged

PCB - A1 connector has 230V AC across terminals 2 & 4 → YES → Replace gas valve

NO

neon flashing → YES → Turn selector switch to reset position R

NO

Replace PCB

G

1. Check the burner setting pressure of the gas valve (see Section 9.2 of Commissioning)

2. Voltage at modulating coil of gas valve is:
   Max. burner press.approx 4.5V DC (7V DC LPG)
   Min. burner press.approx 0.5V DC

   YES → Replace gas valve

   Current at modulating coil of gas valve is:
   (Use an instrument with average function for this measure)
   30 ÷ 230 mA DC (45 ÷ 310 mA DC LPG)

   NO → Replace PCB

H

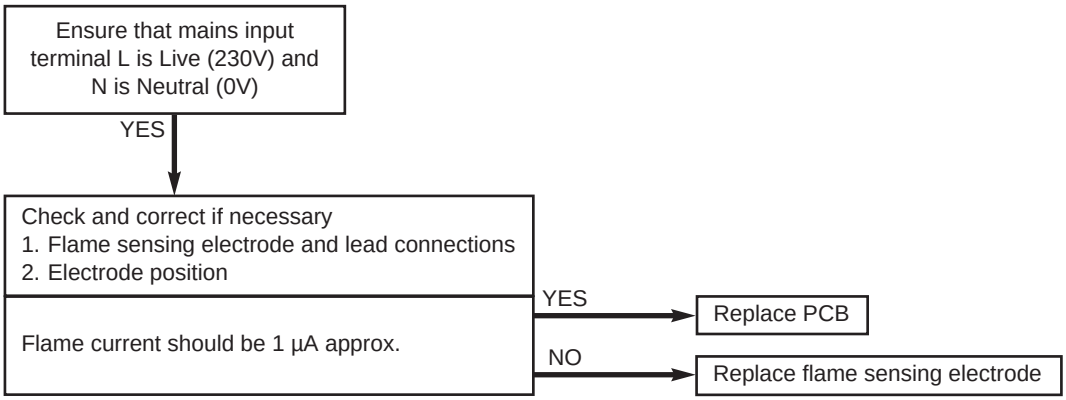
Check and correct if necessary
1. Ignition electrode and lead
2. Electrode connection
3. Spark gap and position

YES → 230V at Main PCB - A1 connector across terminals 3 & 4. Check wiring

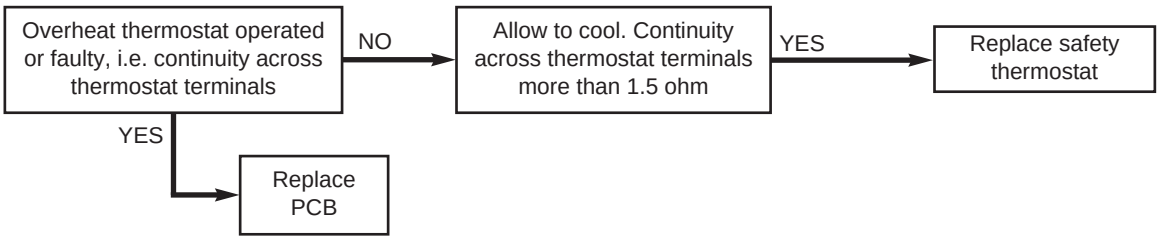
NO → Replace PCB

YES → Replace igniter

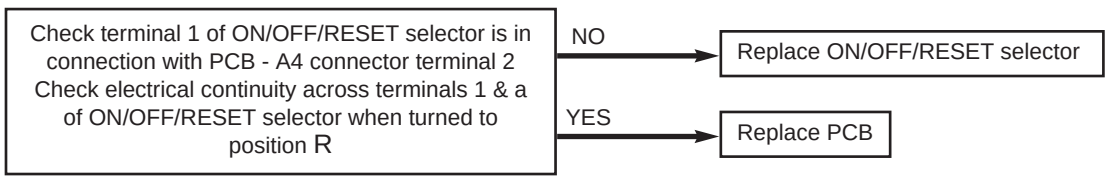
I


Ensure that mains input terminal L is Live (230V) and N is Neutral (0V)
YES
Check and correct if necessary
1. Flame sensing electrode and lead connections
2. Electrode position
Flame current should be 1 µA approx.
YES
Replace PCB
NO
Replace flame sensing electrode

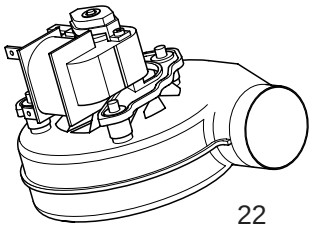
J


Overheat thermostat operated or faulty, i.e. continuity across thermostat terminals
NO
Allow to cool. Continuity across thermostat terminals more than 1.5 ohm
YES
Replace safety thermostat
YES
Replace PCB

K


Check terminal 1 of ON/OFF/RESET selector is in connection with PCB - A4 connector terminal 2
Check electrical continuity across terminals 1 & a of ON/OFF/RESET selector when turned to position R
NO
Replace ON/OFF/RESET selector
YES
Replace PCB

15.0 Short Parts List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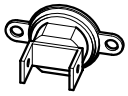
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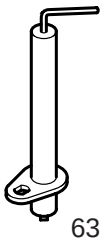
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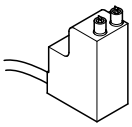
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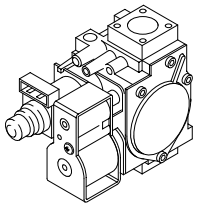
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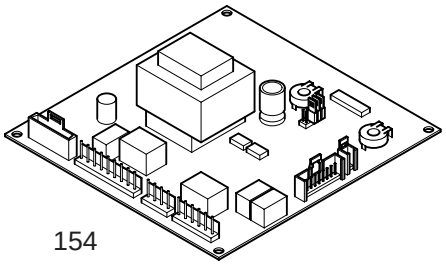
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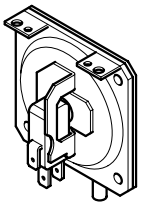
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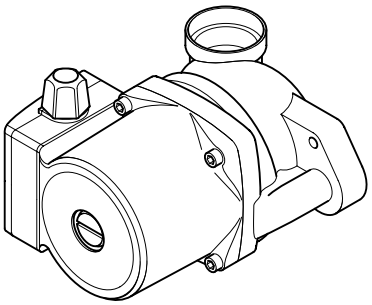
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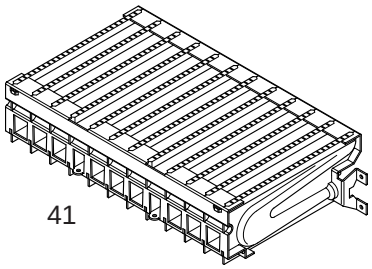
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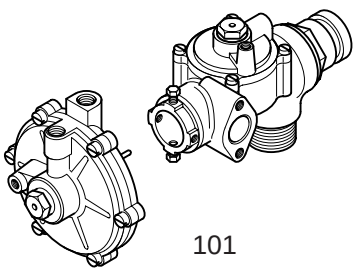
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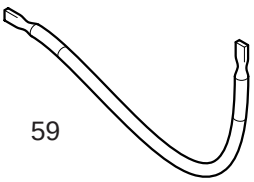
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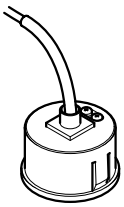
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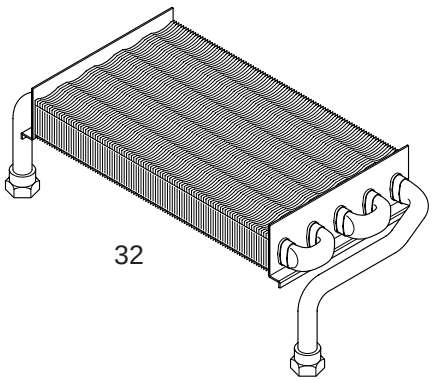
32

Short Parts List

Key No.	G.C. No.	Description	Manufacturers Part No.
22	E66 383	Fan	248001
23	E66 385	Pressure Switch	248466
32	E66 393	Heat Exchanger	248016
41	E66 399	Burner	248030
44	E03 659	Injector	247439
59	E66 408	Electrode Lead	248467
63	E66 411	Spark or Sensing Electrode	247384
72	E66 431	Pump	248041
101	E66 434	3-Way Valve Assy.	248061
131	343 571	Temperature Sensor	247394
135	E66 439	Safety Thermostat	248079
140	E66 499	Gas Valve	247393
154	E66 459	PCB	248074
169	E66 453	Pressure Gauge	248090
291	E66 477	NAC Plug	248469

Comp Nº 248465 - Iss 4 - 5/02

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